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THE JOURNAL OF CHILD PSYCHOLOGY AND PSYCHIATRY AND ALLIED DISCIPLINES

Official Organ of the Association for Child Psychology and Psychiatry

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THE DEVELOPMENT OF AESTHETIC SENSITIVITY IN CHILDREN

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INTRODUCTION

LITTLE research appears to have been done on the development of aesthetic sensitivity in children, using objective measures; this is no doubt due to the absence of agreement of the value of such measures, or the criteria to be adopted. The work of Child (1964) serves as an excellent example of the difficulties which arise in constructing such a test, and the doubts which attend its validation. He used pairs of paintings where one or the other had been judged superior by expert judges; thus the validity of the test depended entirely on the subjective judgements of these judges. In view of the changing standards applied to works of art, it is doubtful if such a criterion is acceptable from the psychological point of view, and Child's discovery that children tended significantly to prefer the worse rather than the better of the two pictures presented must make one doubt if these expert standards had in fact much relevance to their judgements. Preference judgments for paintings are obviously multi-dimensional; pictorial content, colour and other factors influence different people's preferences differently, and confusion is likely to attend efforts to construct an objective standard in this fashion. Our own approach has been rather different, and follows the general considerations presented by Eysenck (1957).

Our first intention had been to use in our studies the Maitland Graves (1946) Design Judgement Test, which consists of 90 sets of 2 or 3 simple non-representational designs, one of which in each case has to be preferred to the other(s). The standard from which the scoring key was derived was the unanimous agreement of groups of art teachers, and Graves showed that art students had much higher scores on the test than did non-art students; these differences were offered by him as evidence of validity. There are two reasons against using the test in the manner intended. In the first place, it was found that for young children 90 sets of designs are too many; the children get bored and cease to attend. Forty designs was found to be the largest number which could reasonably be used. Consequently we restricted ourselves to this number.

In the second place, it was discovered in preliminary studies with adult Ss that Graves's contentions were not in fact borne out when art and non-art students were tested (Eysenck, 1967, 1970; Eysenck and Castle, 1971). Differences between the two groups were small or non-existent; they certainly did not even approximate to those given in his *Manual*. Even worse, the underlying belief of Graves that "the test measures certain components of aptitude for the appreciation or production of art structure by evaluating the degree to which a subject perceives and responds to the basic principles of aesthetic order—unity, dominance, variety, balance, con-

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tinuity, symmetry, proportion, and rhythm" was somewhat undermined when it was found in correlational studies of the 90 items concerned that there was no single, underlying general factor, but rather 4 or 5 quite independent factors; the fact that there are several independent factors makes it difficult to justify the derivation of a single score by simple summation over all 90 items. Fortunately one of the factors appeared to present a reasonably unitary set of designs, linked together by one single underlying principle; this factor also succeeded in producing a highly significant differentiation between art and non-art students. (The other factors failed in producing such a differentiation, thus making the test as a whole a worse selection instrument than the sub-set of items making up factor 1.) It was decided, accordingly, to select our 40 items by reference to these factorial studies, and then to carry out further factorial studies on selected groups of art and non-art students, as well as on the children themselves, in order to arrive at a defensible set of items which could be said to give us a proper measure of aesthetic sensitivity.

As an additional item, we included a personality inventory in the study, in the hope that some information would be obtained on the relation between aesthetic sensitivity and personality. There is little information in the literature to guide us in the formulation of hypotheses, and consequently none are proposed here; our hope is that the data themselves will suggest such hypotheses. Also included in the study were ratings of the amount of instruction in visual art which the children had received in each case; as these ratings failed to correlate with any of our data they will not be referred to again in this paper.

EXPERIMENT

Subjects

Our Ss were school children, mostly from small towns in the West Country, ranging from 7 to 15 yr; there were too few at each end to make results very meaningful for these ages, but for the sake of completeness their results are included. For the most part, however, we shall concentrate on ages 8-14 only. Boys and girls took part in almost equal proportions. The actual numbers involved are given below. Most of the children came from comprehensive schools. An attempt was made to relate scores to type of school, but without success. Our Ss are obviously not in any sense a random sample of British school children, but there is no obvious principle of selection which would make them unrepresentative. Technically all were volunteers, but in effect whole classes were tested, with no-one opting out. For the sake of comparison, and in order to make a proper selection of items for scoring, 200 male and 200 female art students, and 200 male and 200 female non-art students were tested. These Ss were selected with reference to receiving or not receiving professional training in the visual arts, and are similar to those described in a previous publication (Eysenck and Castle, 1971). All groups were similar in age, averaging 21 yr.

Method

Forty items of the Design Judgement Test were reproduced on slides, and projected to groups of children in a darkened room; they were instructed to write down on score sheets supplied to them which of the alternatives they preferred. They

were told that there were no right or wrong answers, and that we were interested in their preferences. The actual items used are identified below. Either preceding or following the presentation of the items the children filled in a personality inventory giving scores on *E* (extraversion), *N* (neuroticism), *P* (psychoticism), and *L* (a Lie scale). The *E* and *N* scales are very similar to those making up the Junior EPI (Eysenck, 1965). The construction of the *P* and *L* scales has been discussed elsewhere (Eysenck and Eysenck, 1969, 1970, 1971; Eysenck, Nias and Eysenck, 1971). The scale used has not yet been published, but closely resembles in its make-up the scales discussed in the above references.

RESULTS

Adults

It was hoped to use results of the analysis of adult data for the selection of suitable items for our children's scale. The following conditions were laid down for selection: (1) an item would only be included if the majority of art students preferred the "correct" design, as indicated in Graves's key, (2) an item would only be included if the majority of non-art students preferred the "correct" design, (3) an item would only be included if the "correct" design was preferred more frequently by art students than by non-art students, (4) an item would be included only if in the factor analysis carried out separately for art students and non-art students it had a loading of 0.30 or above on the first principal component in both analyses. Twenty-two items were found which fulfilled these conditions, with only minor departures. Thus 5 items just failed to show majority vote for the "correct" design among the non-art students; on 3 items the non-art students showed very slightly better agreement with the "correct" choice than the art group; 3 items had loadings of just below 0.30 for one of the two groups, but made up for this by having a loading of above 0.30 for the other group. It was decided in each case to retain the item because although strictly speaking it should have been excluded, nevertheless on the other criteria it was clearly a desirable and useful item. In none of the cases considered was the failure to reach the criterion even remotely statistically significant. Our analysis thus furnishes us with a scale of 22 items which may be used as a measure of aesthetic sensitivity; it is this scale which will be used in our analysis of the results obtained with children.

A little more information requires to be given regarding the results of our study of adult choices. Using product-moment correlations to obtain our matrices for the 400 males and the 400 female Ss, we then extracted two factors by means of principal components methods. The first of these was identified as a general factor of aesthetic sensitivity, and the loadings of the 22 items finally chosen are shown in Table 1, as are the Eigenvalues of the factors in question. (A varimax rotation was carried out, but produced so little change in loading pattern that it was disregarded.) Table 1 also gives the numbers of the 22 items chosen, so that they can be identified in the Design Judgement Test. Items 4, 10, and 16 are given out of order at the end of this table because these items had loadings on one or other analysis of less than 0.30.

Scales made up in the manner described would be expected to be reasonably reliable measuring instruments, and accordingly alpha coefficients were calculated for our groups. For the males, reliabilities were 0.88 for the non-art and 0.80 for the

TABLE 1. EIGENVALUE AND FACTOR LOADINGS OF CHILDREN AND STUDENTS (*C* = CONTROLS, *A* = ARTISTS) ON SELECTED ITEMS OF THE MAITLAND GRAVES DESIGN JUDGEMENT TEST

Ages	Male				Female				<i>C</i>	<i>A</i>
	9	10	12	13	9	10	12	13		
Eigenvalues	4.55	4.15	4.98	6.49	4.72	5.39	6.55	6.12	7.63	5.74
Design No.										
6	0.35	0.21	0.46	0.30	0.46	0.31	0.67	0.59	0.56	0.40
8	0.26	0.21	0.50	0.42	0.49	0.33	0.37	0.46	0.52	0.38
21	0.49	0.66	0.67	0.53	0.48	0.35	0.53	0.56	0.58	0.53
25	0.34	0.26	0.38	0.48	0.35	0.27	0.07	0.58	0.32	0.43
28	0.34	0.38	0.21	0.24	0.19	0.37	0.25	0.56	0.48	0.36
29	0.39	0.54	0.52	0.60	0.45	0.52	0.61	0.50	0.62	0.53
42	0.36	0.41	0.33	0.40	0.42	0.46	0.32	0.45	0.42	0.31
44	0.64	0.38	0.53	0.63	0.36	0.39	0.28	0.54	0.51	0.33
47	0.25	0.40	0.41	0.56	0.48	0.44	0.37	0.51	0.56	0.56
48	1.51	0.56	0.60	0.64	0.60	0.65	0.50	0.54	0.66	0.56
50	0.41	0.39	0.50	0.58	0.41	0.40	0.63	0.29	0.60	0.46
51	0.39	0.30	0.25	0.45	0.32	0.48	0.46	0.31	0.61	0.38
53	0.32	0.11	0.44	0.32	0.30	0.37	0.47	0.18	0.52	0.36
57	0.53	0.29	0.52	0.63	0.52	0.53	0.61	0.55	0.65	0.66
59	0.64	0.33	0.53	0.68	0.45	0.58	0.65	0.56	0.67	0.58
61	0.64	0.60	0.41	0.58	0.52	0.58	0.47	0.49	0.69	0.54
66	0.59	0.50	0.34	0.57	0.54	0.52	0.40	0.63	0.54	0.52
69	0.46	0.25	0.42	0.57	0.49	0.44	0.60	0.29	0.55	0.40
72	0.12	0.19	0.20	0.40	— 0.19	0.36	0.43	0.47	0.46	0.40
4	0.27	0.43	0.21	0.26	0.39	0.38	0.26	0.05	0.29	0.32
10	0.18	0.18	0.19	0.45	0.12	0.36	0.47	0.30	0.48	0.29
16	0.04	0.03	0.35	0.45	0.21	0.29	0.36	0.39	0.42	0.26
<i>P</i>	0.12	0.07	— 0.18	0.00	— 0.23	— 0.43	— 0.25	— 0.12		
<i>E</i>	0.17	0.09	0.04	— 0.12	0.13	— 0.14	— 0.02	— 0.05		
<i>N</i>	— 0.02	0.02	— 0.24	— 0.08	0.14	— 0.11	— 0.20	0.01		
<i>L</i>	— 0.05	— 0.02	0.19	0.10	0.17	— 0.07	0.18	0.13		

art groups; for the females, reliabilities were 0.88 and 0.83. These figures are sufficiently high to give one confidence in the reliability of the measuring instrument. Each *S* was given a score on the basis of giving 1 point for each correct answer; mean scores were 17 and 19 for male non-art and art students respectively, and 18 and 19 for the female non-art and art students. (Exact means and *S.D.*s are given in Table 2.)

Children

Main results of this study are given in Table 2, which shows the number of children in each age and sex group, the reliability of the score (alpha coefficients), and the mean scores and *S.D.*s; for the sake of comparison, Table 2 also shows the results for the two adult groups. The letter *C* (controls) refers to the non-art group, the letter *A* to the art group. The number of *S*s is given in connection with each group; as mentioned before, there are too few children in the 7 and 15 yr groups to make the results meaningful, but they have been included for the sake of completeness. Scores do not attain reasonable reliability until the age of 9; they do not seem to change much after that, at least not in any consistent fashion. Boys and girls do not seem to differ with respect to reliability. The figures suggest that whatever the test is measuring in adults, it is measuring with only slightly less reliability in children of 9 yr and older.

TABLE 2. RELIABILITIES (ALPHA COEFFICIENTS), SCORES AND *S.D.*'s OF DIFFERENT GROUPS OF CHILDREN. ALSO GIVEN ARE NUMBERS OF CHILDREN IN EACH GROUP

Age	<i>N</i>	<i>r</i>	Score	<i>S.D.</i>
<i>Male</i>				
7	11	0.27	16.36	1.38
8	41	0.54	16.57	1.65
9	78	0.75	16.13	2.14
10	77	0.71	15.95	2.00
11	46	0.58	15.91	1.70
12	97	0.78	16.64	2.22
13	112	0.86	16.68	2.66
14	35	0.76	16.76	2.19
15	30	0.76	16.57	2.18
<i>C</i>	200	0.88	17.06	2.89
<i>A</i>	200	0.80	18.87	2.15
<i>Female</i>				
7	16	0.05	16.38	1.20
8	54	0.38	16.13	1.47
9	82	0.75	16.02	2
10	85	0.80	15.86	2.32
11	49	0.62	16.95	1.81
12	103	0.83	16.86	2.42
13	97	0.83	17.07	2.49
14	51	0.57	16.65	1.69
15	7	0.14	16.64	1.07
<i>C</i>	200	0.88	17.89	2.75
<i>A</i>	206	0.83	18.66	2.31

Figure 1 graphs the scores of children and adults, for both sexes combined. There appears to be a none-too-regular progression of scores with age, with all secondary school groups having higher scores than all primary school groups. Analysis of variance (excluding the 7 and 15 yr groups because of their small size) shows that sex is insignificant, both as a main variable and in interaction with age. Age is significant beyond the 0.001 level, and many individual comparisons are significant by *t*-test, at levels going up to $p < 0.001$. Ages 9 and 10, compared with ages 12, 13 and 14 give the biggest p values. These results leave little doubt that aesthetic sensitivity, as measured here, increases with age and that this progression is not confined to one sex.

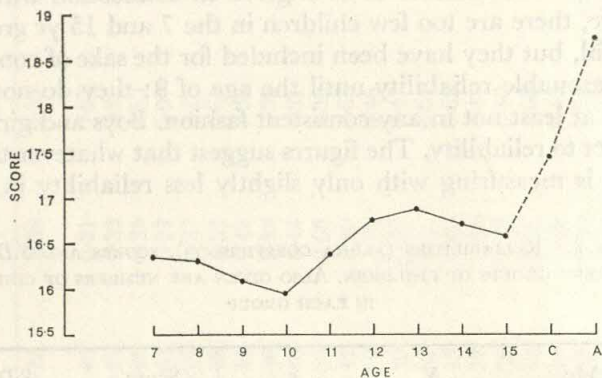


FIG. 1. Scores of children, non-art students and art students on 22-item scale of aesthetic sensitivity

It may be useful to add to the evidence from reliability further proof that the test measures much the same sort of thing in children as it measures in adults. Factor analyses were carried out on the 9-, 10-, 12- and 13-yr-old boys, and the 9-, 10-, 12- and 13-yr-old girls, exactly along the lines of the analyses already reported for the adults. (The other age groups had too few children in them to make factor analysis possible.) Results are reported in Table 1. It will be seen that the loadings of the items are all positive (with a single, insignificant exception among the 9-yr-old girls), and roughly similar to, though smaller than, the loadings for adults. Size of loadings seems to increase with age, as one might have expected, and so does the size of the Eigenvalues characteristic of each principal component. These figures suggest that the test measures a similar or identical factor in children as in adults, but that whatever psychological trait gives rise to this factor is less clearly structured in the younger children than in the older ones, and in children as a whole than in adults. The conclusions agree quite well with those derived from our study of means and reliabilities.

For our children groups, scores on the *P*, *E*, *N* and *L* variables of the questionnaire were included in the factor analysis, and the loadings of these scales on the "aesthetic sensitivity" factor are shown in Table 1. If we may treat these loadings as correlations, then several of them are significant at the 0.05 and 0.01 levels, and in addition there seems to be some consistency, even where correlations fall short of significance.

Correlations with P are almost universally negative, and frequently significantly so; we may conclude tentatively that the cold, impersonal, aggressive, unemotional individual that emerges from the items of the inventory has little aesthetic sensitivity, a conclusion which may be in good agreement with popular stereotypes of the "artistic temperament". N , too, appears to have a negative relation to aesthetic sensitivity, although this relation is somewhat less strong than that of P ; replication would be required before much attention can be given to this finding. L and E do not correlate significantly with sensitivity in any of the groups; it is perhaps suggestive that L tends to have several positive correlations with sensitivity in the older groups. In view of the dearth of previous information in this field, none of these figures can be taken too seriously, but the suggestion remains that personality may correlate to some extent with aesthetic sensitivity.

Total scale

It might be thought that our results are in part an artefact produced by selection of a special set of 22 items from our total of 40. It may therefore be useful to report briefly on the results achieved with the total scale. The Graves numbers of the 18 additional items are: 5, 12, 14, 15, 18, 20, 22, 23, 24, 27, 30, 32, 40, 55, 76, 78, 79, 80. All had positive loadings on the "aesthetic sensitivity" factor, but these were smaller than those of the items included in the short scale. On many of these items the average preference for the "correct" design was less than 50 per cent, and often the "correct" design was preferred more frequently by the non-art students than by the art students. Taking the whole set of 40 items, there were still significant differences

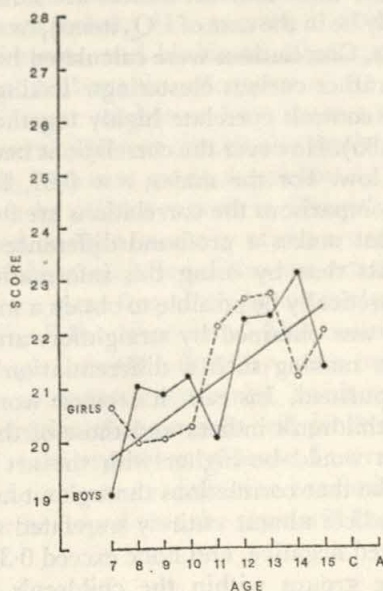


FIG. 2. Scores of male and female children on 40-item scale of aesthetic sensitivity. Regression line fitted by eye.

between the art students and the non-art students; with respect to the children, there was again a moderately regular improvement in scores with increasing age, regardless of sex. Figure 2 plots mean scores, for the children and adults. Analysis of variance again showed the progression of score with age to be significant. There is thus no reason to suspect that the selection of 22 items from the total scale of 40 used in the experiment had altered the main conclusion to be derived from the study; it may be hoped that selection has somewhat improved the test and made the results clearer than they would otherwise have been. Furthermore, the shortened test is psychometrically and psychologically more defensible than the longer one. But essentially both versions give similar results.

There is, however, one point on which the results from the 40-item scale deviate from those of the 22-item scale. With the short scale, all the children's groups were well above the chance level of approximately 11; with the long scale, the 7-yr-olds are just about at the chance level, and while the older groups exceed it, they do not do so by very much. This means that on the added items the children are more frequently "wrong" than "right", and this is indeed so; we have already mentioned that these added items also have much lower factor saturations, i.e. they correlate much less with the central items of the short scale. The added items are thus less "relevant" (they do not conform very well to our criteria), but they produce a more marked increase in score with age. It may be possible that these added items are more closely determined by formal teaching, but of course our data are not capable of providing us with evidence on this point.

It is possible to calculate a "difficulty index" for each item, for each group, by simply obtaining the proportion of "correct" answers for that item, in that group. The question arises whether these difficulty indices are similar from group to group (as they would undoubtedly be in the case of I.Q. items), or whether there are marked differences between groups. Correlations were calculated between all 22 groups, and the results indicate some rather curious clusterings. Taking the adults first, we find that the male and female controls correlate highly together (0.79), as do the male and female art students (0.85). However the correlations between the art and non-art student groups are quite low. For the males, $r = 0.07$, for the females $r = 0.51$, and for the male-female comparisons the correlations are 0.28 and 0.28. Thus being or not being an art student makes a profound difference to the "difficulty level" of the items. This suggests that by using this information and weighting items differentially it would theoretically be possible to obtain a much better differentiation between the groups than was obtained by straightforward summing of scores. As there seems little point in making such a differentiation in practice, this line of argument has not been pursued. Instead, it seemed worth while to look at the correlations between the children's indices and those of the adults, with a view to seeing whether agreement would be higher with the art or non-art groups. The answer, in brief, seems to be that correlations throughout are low with both groups; children have difficulty indices almost entirely unrelated to those of adults. Some of the correlations are indeed negative, and none exceed 0.30. However, correlations between the different age groups within the children's sample are consistently high, rising to the 0.80s and 0.90s. There are thus three distinct groups which emerge from our analysis of difficulty indices: art students, non-art students, and children.

Sex does not cause any noticeable differentiation in this connection. The meaning of these groupings is not easy to understand, but the facts are so clear that it seemed desirable to state them briefly, in the hope that further work might throw some light on the problem.

DISCUSSION

The general tenor of the results seems to be in good accord with what common-sense might have predicted. If our test measures some component of aesthetic sensitivity, then art students are superior to non-art students; as far as children are concerned, sensitivity seems to improve as they grow older. The improvement is rather slight, even though statistically significant, and it is by no means as clear-cut as one might desire. Furthermore, the improvement seems independent of formal teaching; correlations between formal teaching and scores on the test were uniformly insignificant. Taking all these facts together, one might come to the conclusion that maturation was probably more influential than teaching in producing "correct" judgements on the test; indeed, the fact that even at the age of 7 children already have scores of over 16, when 11 represents the chance level, suggests that formal teaching cannot have had much influence on their ability. With a total range of 11 points (from chance level to perfect score), our 7-yr-olds have already come up almost to the half-way point on our scale, in the absence of any art teaching at all; this fact too suggests the presence of some genetic factors. Direct work with twins would seem indicated to verify this suspicion. The fact that differences between art and non-art students are quite small (just over one point on an 11-point scale) also suggests that formal teaching does not play much part in the genesis of the aesthetic response—quite apart from the fact that such differences as are found might have been present before students took up their courses, and may have been instrumental in determining choice of career, and likelihood of acceptance in art school.

Critics may raise doubts about the adequacy of the test. Criteria in this field are notoriously difficult to agree on, but we have made a special effort to construct a test which would meet several different criteria simultaneously. Determination of the "correct" answer for each item was made dependent on a number of criteria; (1) the answer was agreed on by all the experts in Graves's original group of judges; (2) the answer was agreed on by a majority of the art students in our sample; (3) the answer was agreed on by a majority of the non-art students in our sample; (4) the correct answer was given more frequently by art students; (5) the item correlated positively and highly with all the other items. This multiplicity of criteria, plus the fact that the scale has high internal reliability, does not guarantee that we have achieved a pure measure of aesthetic sensitivity, but it makes it more likely than a less stringent system of selection that our data will prove capable of replication, and that our conclusions will make psychological sense. In a rather novel field, with little previous research to guide one, more definitive conclusions are obviously unlikely to be forthcoming; it is to be hoped that the topic will be taken up by other workers in the educational field.

SUMMARY

Five hundred and twenty-seven male and 544 female children, aged 7-15, and

400 male and 400 female art and non-art students were administered a shortened version of the Maitland Graves Design Judgement test. Of the 40 items used, a scale of 22 items was selected on the basis of factor analysis, and a comparison of the scores of the art and non-art groups; this scale had high internal reliability, both for the students and the children. The scores of the children on this scale increased with increasing age, but the increase was small, although statistically very significant, and irregular; non-art students scored higher than the children, and art students higher than non-art students. Personality questionnaire scores were found to correlate with aesthetic sensitivity in the children. No correlations were found between sensitivity and amount of formal art teaching received at school. This, together with the relatively high scores achieved by quite young children of 7 and 8, suggests that sensitivity is not due to formal training in visual arts.

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PROBLEM-SOLVING STRATEGIES OF YOUNG CHILDREN

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INTRODUCTION

IN AN EARLIER series of studies (Woodward, 1959, 1961, 1962a; Woodward and Stern, 1963), the development of severely subnormal (S.S.N.) children was investigated in the light of Piaget's classifications of sensori-motor behaviour in infancy and of the work of Piaget and Inhelder that deals with the period from approximately 4½-7 yr. Concerning the period in between, from 1½-4½ or 5 yr, the Genevan studies have indicated the limitations of children in this phase, compared with the succeeding one; the advances made in it, compared with the first 18 months of life, have received less attention. Although there has been an upsurge of research interest in pre-school children in recent years, this has rarely extended to the youngest age group. A further series of exploratory studies has thus been conducted, with a view to attempting to elucidate some aspects of the sequence of cognitive development in this period.

The main aim has been to clarify what questions may usefully be asked. The behaviour of children when handling complex sets of material has been used as a starting point. The results of a study of S.S.N. children have been reported in the context of the practical applications (Woodward, 1962b). This paper discusses in more detail the findings concerning three sets of material.

One of these (a set of nesting cups) presents children with a number of problems if they do not select the elements in order of size. The strategies adopted by the S.S.N. group appeared to give useful leads concerning some aspects of early cognitive development. Hence further observations were made of the way young normal children of under 5 yr handled material that varied in size, and a group of 5-yr-olds was included in order to determine whether they could state the basis of their selection of the elements.

METHODS

Subjects

Group 1. The nesting problem was given to and used by 96 of a larger sample of S.S.N. children ($N = 135$) which was a total sample of S.S.N. children attending a hospital school, except for the class for children with severe motor disabilities. The age range of the 96 children was 3-15.9 yr. The testable ones had I.Q.'s under 50. Seven were severely deaf, 2 had cerebral palsy, and 18 had a severe behaviour disturbance.

Group 2. Thirty-three normal children, aged 18-59 months (with 26 under 3 yr),

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were drawn from Infant Welfare Clinics and 9, aged 30–35 months, were drawn from an L.E.A. Nursery School, making 42 in all.

Group 3. Forty normal children, 10 in each age group of 36–41 months, 42–47 months, 48–53 months and 54–59 months, with 5 girls and 5 boys in each age group, were randomly selected from the class lists of two L.E.A. nursery schools.

Group 4. Twenty normal children, 10 (5 boys and 5 girls) in each of the age groups of 60–65 months and 66–71 months, were randomly selected from the class lists of an Infants School.

Since the aim was to explore the period between the end of Piaget's sensori-motor period and the beginning of his intuitive one, suitable problems and tasks were given to the younger and older children respectively, in order to ensure that all had attained the end of the first period, and to find out whether any had entered the other. A previous study (Woodward, 1959) had indicated a close correspondence between the sixth stage of the "object concept" as defined by Piaget (1955), and solution of problems in a manner by which Piaget (1953) characterized his sixth stage of sensori-motor intelligence. Hence the object concept problems were used in this study. By this criterion, all the 7 normal children aged 18–23 months and the younger S.S.N. children had attained Piaget's sixth stage.

Seven of the children in Group 3 showed "intuitive" thinking, in Piaget's terms, on one or more of the following tasks: a linear spatial order copying task (Piaget and Inhelder, 1956); a problem of seriation or of one-to-one correspondence (Piaget, 1952). The procedures used are described in Woodward (1961, 1962a). All the 20 5-yr-old children showed intuitive thinking on the spatial order task, and 15 did so on a sorting task. None was classifiable as concrete-operational, as defined by Piaget, on tasks of seriation and conservation, though two were transitional. One of the S.S.N. children showed intuitive thinking, and another was transitional.

PROCEDURES AND METHOD

In addition to the main problem used, results are reported of the behaviour of some of the S.S.N. children when handling two other sets of material. One was a square box into which 16 cubes fitted closely and the other was a rectangular board, with a row of holes into which six round pegs fitted. Both sets were presented with the objects fitted in the box or board. These were removed by the child or the investigator. Some children spontaneously began to put the objects back. If they did not do so, it was suggested that they should, after an interval allowed for handling the objects in other ways.

The main set of material, presented to all groups, consisted of a commercially available set of 12 cylindrical cups (without handles) ranging in diameter from approx. 1-2 $\frac{1}{4}$ in. and in height from approx. 1-2 $\frac{1}{2}$ in. When the cups were placed in one another, in order of size, they formed a "nest". The material was presented in this form to children who were observed individually; the mothers of children in Group 2 were present. It was suggested to the children that they should take the cups out one by one and hand them to the investigator who placed them singly on the table to one side (the child's right) of the largest cup, No. 12, which was left in

front of the child. The instruction was to put the cups back as they were, in "there", cup No. 12 being designated. This was often superfluous and some children began the task before the instruction was given. Putting in, rather than building up on the bases, was encouraged since the cups had been placed on their bases with the open end upwards.

Interest was in the kinds of strategies adopted. Hence only one trial was given to Group 1 (S.S.N.) and to Group 2. Group 1 was, however, highly practised, since the material was standard equipment in the hospital school, and the material was unfamiliar to all but one of the children in Group 2, according to the mothers. Thus a second normal Group (3) was studied, for the observation of strategies used after practice. Children who did not select by size on the first trial were given practice until they either selected by size, or showed no improvement over 3 trials. The number of trials given was as follows: up to 3, 17 subjects; 4-5, 7 subjects; 6-7, 14 subjects, and 8-9, 2 subjects. A formboard task was interpolated, after the second or third trial, if interest declined; when necessary, trials were continued the following day. The normal children in Group 4, who were included in order to examine any relation between selection by size and ability to state verbally the principle of selection, were given 3 trials. The other problems described above, for the assessment of the presence or absence of "intuitive thinking", were given after the nesting task, on another day if necessary.

In order to check that children who selected by size had not learned a colour cue, one set given to Group 3 was painted red. Different sets, with variations in the colours of particular elements, were used on successive trials for Group 4.

Ideally a method for recording the whole sequence of moves was required, but the limitations of a human recorder prevented this. The main observations were of actions with the cups brought to the largest cup or others that had been placed in it, nested, or in piles. Priority was given to recording what action was taken with a cup rather than noting which particular cup was selected. For Group 1 (S.S.N.) a check list of strategies was used (these having been identified in a pilot study). A record was made of whether a strategy occurred at least once, or not at all; if the same strategy was used on every move, this fact was noted. During the course of the study of Group 2, a system of notation was developed, so that the action taken with each cup selected could be recorded. This coding system was used with Groups 3 and 4. For these groups the sequence of actions is thus known, as well as the exact frequency of responses and of the frequency of "obstruction" problems. Obstruction situations are illustrated in Fig. 1.

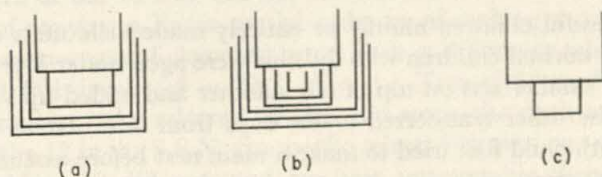


Figure 1a illustrates the situation when a few cups have been placed in order in the largest (No. 12) followed by *one* of the incorrect size. Figure 1b illustrates the situation when several smaller, incorrectly placed cups obstruct another. The situation

depicted in Fig. 1c arises when the child makes pairs of cups or sets of 3 or 4, apart from the main nest. In this case the obstructing cup is visible. When the child made several smaller nests, attempts to combine them were noted, though the details of the actions taken when consecutive cups were in different nests could not be recorded.

The system of notation dealt with a behavioural unit or "move" that began with the selection of a cup from the array and ended when that cup was disposed of in some way—in, or on, the main nest, or elsewhere—or returned to the collection. Another unit began with the selection of another cup. The structure built up from the largest cup (No. 12) is referred to as the main nest. The following information was recorded:

- (1) Whether a cup placed in the main nest was or was not the largest in the array, and whether other cups placed in one another were of consecutive sizes.
- (2) Whether a cup placed in the top one in the main nest was left there or removed.
- (3) Actions taken in the obstruction situation.
- (4) Other manipulative behaviour.

When attempts were made to combine two nests of cups that were not in order of size, the moves could not be recorded.

RESULTS

For the groups whose individual moves were recorded in sequence, over a series of trials, more data are available than can be presented briefly. Emphasis in the presentation and discussion of results will be upon the types of strategies adopted by the subjects.

Some behaviour was not directed towards nesting cups. Building on inverted cups was rare, though the behaviour of putting a cup repeatedly in and out of another was more common. This was shown by 12 S.S.N. children of whom 10 were under 5 yr of age, and by 2 normal children who were aged 18 and 25 months respectively. This behaviour of repeatedly putting objects in and out of another was also shown by some children with the 16 cubes and box and the 6 pegs and the peg-board. Of 30 S.S.N. children who handled all three sets of material, 22 followed a "put and leave" pattern for all sets: they put all the bricks in the box, all the pegs in the holes and piled all the cups upwards (taking no action in the obstruction situation), or put a cup in another and left it there. Of the remaining 8, two performed the "in-out" pattern with all 3 sets of material, and 6 did so for one or two sets.

Eight unsuccessful children mainly or entirely made little nests of two or three cups. Six of the 7 normal children who did this were aged under 3 yr. All but one of these 6 piled the smaller sets on top of one another and ended up with one or two unstable piles; the other transferred a few cups from one nest to another before piling. The seventh child first tried to make a main nest before assembling small sets from those in the array.

Of the successful children, only one child nested all the cups by putting small sets in order of size (unlike the above children) and then combining these. The rest began by putting a cup in the largest, and then went on from there. Selection of cups

from the array in order of size (the largest each time) is described as *Strategy 1*. When children did not select cups in order of size, the strategies they adopted are described below. Strategies 2 and 3 are of actions taken at once when wrongly selected cups have not been removed, namely when obstruction situations do not arise.

Strategy 2. A cup of the wrong size (i.e. not the largest in the array) is held inside the top of the last cup nested, and then returned to the collection, without being dropped in.

Strategy 3. A cup of the wrong size is dropped into the last one nested, and then removed and returned to the collection.

Strategy 4. The obstructed cup is taken off the nest and the obstructing cup is removed or several cups are removed; the obstructed cup is then placed in the nest. (Sometimes the obstructing cup is removed as the child approaches the nest with the cup it would obstruct.)

Strategy 5. The obstructed cup is taken off the nest and the obstructing cup is removed; both are returned to the collection of unnested cups.

Strategy 6. The obstructed cup is taken off and placed underneath the main nest, and then returned to the collection. In the situation depicted in Fig. 1c, such action results in the two cups being nested.

Strategy 7. The obstructed cup is taken off and placed successively on cups not nested until it goes into one.

Strategy 8. The obstructed cup is taken off and returned to the collection of unnested cups.

Strategy 9. No action; the obstructed cup is left where it is.

Some children used the same strategy on all moves, though many used several. The main combinations of strategies used by successful children and those that led to failure are shown in Table 1. The child who succeeded by assembling smaller nests has been included among those who used strategies 1 and 4 for one main nest, since he adopted these when making his smaller sets.

It will be seen that success by the selection of all, or all but one, of the cups by size, was achieved by relatively few children. This level of performance, on the first, second or third trial, significantly differentiates children of 4½ yr and over (14 of 30) and those below this age (1 of 30) ($\chi^2 = 15.02$, $p < 0.001$, $df = 1$). The use of another set of a different colour did not affect performance.

This age difference mainly reflects a developmental change at the beginning of the period which Piaget has termed "intuitive". All the 14 children in Groups 3 and 4, who selected all or all but one of the elements by size within the first three trials, compared with 13 of the 46 who did not so select, were classifiable as intuitive on either the task of copying a linear spatial order or of making a one-to-one correspondence between two sets of elements, or on both, a difference which is significant at beyond the 0.001 level. ($\chi^2 = 22.3$, $df = 1$.) Two children in Group 3 not classifiable as intuitive, who selected by size, did so on the sixth and seventh trial respectively. Of the 12 in the S.S.N. group who selected by size, one showed evidence of intuitive thinking, 10 did not, and one was unassessable through lack of co-operation. No others were classifiable as "intuitive".

Fifteen children in Group 4 selected enough elements by size to be asked about the basis of their selection. Eight made responses such as "I took that one", or named

TABLE 1. NESTING TASK: STRATEGIES USED

Types of strategy and success or failure	S.S.N. Group 1 single trial <i>N</i>	Normal < 5 yr		Normal 5+ yr Group 4 last trial <i>N</i>
		Group 2 single trial <i>N</i>	Group 3 last trial <i>N</i>	
<i>Succeeded: strategies used</i>				
1 on 11 of 11 or 10 of 11 moves	12	0	8	8
1 after 1st 2-3 moves	5	0	0	0
2 and/or 3 alone, or with 1	21	2	0	4
4 alone, or with 3, 2 or 1	21	6	19	3
<i>Failed on account of</i>				
Removing too many cups while using strategy 4	8	9	6	1
Use of inadequate strategies (5-9)	16	17	6	4
Made pairs or sets of 3 and piled	1	6	1	0
Predominantly in/out behaviour	4	2	0	0
Only in/out behaviour	8	0	0	0
Totals	96	42	40	20

the irrelevant attribute (colour). Three descriptively referred to the relevant attribute (e.g. "they're big, they're small"), though only two stated size as the basis of selection, "it's the size" or "how big it is". One child described a cue for fitting. The final one precisely described strategy 3: "What I did was this"—(he took two cups from the nest to demonstrate)—"It didn't come up to there, so I took it out and put this one in". Further enquiry did not elicit how he selected "this one".

Eighteen of 59 successful S.S.N. children succeeded without selecting any element in order of size, either using strategy 4 all the time (6 cases), or strategies 2 or 3 (5 cases) or a combination of these strategies (7 cases). The only normal child who succeeded without selecting any elements by size was the youngest to solve the problem, aged 2 yr 7 months.

Complete avoidance of obstruction situations by the use of strategies 2 and 3 (removing wrongly placed cups at once), on every occasion when a cup of the wrong size was placed in the nest, was achieved by 23 of the highly practised S.S.N. children on their single trial. Six children in Groups 3 and 4 (whose individual moves were recorded) removed all wrongly sized cups on all trials, and another 5 lapsed only once. Eleven were among the 30 aged 4½ yr and over, while none of the 30 under that age consistently used strategies 2 and 3, a difference which is significant at beyond the 0.001 level ($\chi^2 = 13.46$, $df = 1$).

The number of obstruction situations produced on the first trial by children in Groups 3 and 4 is shown in Table 2, from which it may be seen that 25 of the 60

TABLE 2. NUMBER OF OBSTRUCTION SITUATIONS ON FIRST TRIAL (GROUPS 3 AND 4)

No. of obstruction situations	Succeeded on all trials <i>N</i>	Failed initially then succeeded <i>N</i>	Failed all trials <i>N</i>	Totals <i>N</i>
0	6	0	0	6
1-2	12	1	1	14
3-4	8	1	6	15
5-9	3	5	6	14
10-16	4	2	5	11
Totals	33	9	18	60

children produced 5 or more. By the last trial 15 eliminated them altogether, while another 18 lapsed only once or twice; none produced more than four. The most marked decrease was usually from the first to the second trial; the number increased after the first trial in only four cases.

Strategy 4 (removing the obstructing cup—or cups—and inserting the obstructed one) can, if consistently used, end in a successful solution, because each time it is used a cup that is larger than that removed is placed in the nest and not left on top of the last cup. Eventually by the continued use of strategy 4 the largest cup of those not nested will be placed in the nest, and so on for the next one. Six of the S.S.N. children succeeded entirely by the use of this strategy, being remarkably adept at it. The consistency with which strategy 4 was used by children in Group 3 is shown in Table 3, for those who produced 10 or more obstruction situations over all trials.

It will be seen that strategy 4, as might be expected from the above analysis, was the predominant strategy of successful children when they dealt with the obstruction situation. However, the sequences of moves are more informative than the incidence of strategies; in some instances long runs of inadequate strategies (5-9) preceded the use of strategy 4.

Strategy 4 fails if cups larger than the obstructed one are removed along with smaller ones, since these will be obstructed later by the cup just placed in the nest. This happened more often when there were several obstructing cups to be removed, as in Fig. 1b in diagram 1; 60 instances of this behaviour were observed in Groups 3 and 4 (19 of the 60 children). It also occurred in Groups 1 and 2, though the incidence was not recorded. Some children began removing obstructing cups one by one and then continued doing this with correctly placed ones until all were taken out, so that they were back at the beginning again. The correctly placed cups which they removed had often been placed by the laborious procedure of successions of moves using strategy 4. This was a cause of failure to solve the problem for some children, since irresolvable difficulties resulted from it, particularly when a second nest was started. The numbers are given in Table 1.

However, some subjects did adopt a strategy to deal with the problem of repeatedly removing the correctly placed cups along with incorrectly placed obstructing ones. After removing each cup they placed the obstructed cup on top of the nest.

TABLE 3. CONSISTENCY OF THE USE OF STRATEGY 4 BY CHILDREN WHO PRODUCE 10 OR MORE OBSTRUCTION SITUATIONS OVER ALL TRIALS (GROUP 3)

Strategy 4 as percentage of number of obstruction situations* %	Succeeded on all trials or after initial failure N	Failed on all trials N	Totals N
80-100	14	1	15
50-79	4	3	7
10-49	2	3	5
< 10	0	5	5
Totals	20	12	32

*The numbers of obstruction situations were as follows: 10-19 (14 cases), 20-39 (13 cases), 40-69 (3 cases).

If it still stayed on top, they removed another; when it went in they stopped removing cups. With the use of this procedure they of course achieved the result of stopping at the point at which the obstructed cup was larger than those removed and smaller than those left in. Fourteen of the S.S.N. children dealt with the problem with the strategy just described, as did 4 of the normal 5-yr-old group. A further 14 normal children who subsequently removed the correct number of cups, after removing too many on previous occasions, stopped at the correct place without placing the cup on the nest each time; they presumably used a visual guide alone. The behaviour of removing too many cups was eliminated by the last trial in all these cases.

The inadequate strategies (5-9) were also eliminated by the last trial by the 18 children in Group 3 who initially adopted them; in half of these 18 cases the elimination was achieved by the second trial. The continued use of inadequate strategies was the other common cause of failure (see Table 1). Nevertheless the adequate strategy (4) in the obstruction situation was rarely absent in normal children of 2½ yr or over, 26 of 31 in Group 2, to whom the material was unfamiliar, using it at least once in the course of their single trial; one of the 11 aged under 2½ yr in this group did so. Similarly in Groups 3 and 4, whose individual moves were observed over a series of trials, only 5 of the 18 children who failed all trials did not use the adequate strategy at all. Inadequate strategies, however, predominated; strategy 9 (leaving the obstructed cup where it is) and strategy 8 (removing it and returning it to the collection) were the most frequently used inadequate strategies. The children who failed on account of using inadequate strategies or of removing too many or, in a few cases, too few cups, occurred in all age groups, as Table 4 indicates. There are thus no clear age trends.

TABLE 4. AGE AND FAILURE ON ALL TRIALS (GROUPS 3 AND 4)

	Age in months						Totals
	36-41	42-47	48-53	54-59	60-64	65-69	
Failed all trials	6	2	5	0	3	2	18
Succeeded on some or all trials	4	8	5	10	7	8	42
Totals	10	10	10	10	10	10	60

With the exception of strategy 7, all the varieties of inadequate strategies were shown by some children in all groups. Strategy 7 (placing the obstructed cup on others in the array until it goes into one) was not observed in the practised S.S.N. group.

DISCUSSION

When selection of the elements in order of size is the most efficient way to solve a problem, children who do not do this adopt a variety of strategies to deal with ensuing difficulties. From the point of view of asking what is revealed by the behaviour observed concerning cognitive processes in the period from $1\frac{1}{2}$ - $4\frac{1}{2}$ yr, discussion may most usefully be focussed on these strategies, together with an examination of age trends in practised and unpractised performance.

The difficulties and strategies adopted may be summarized as follows: when children do not select cups by size, those they place in the nest will eventually obstruct a larger cup. The obstruction situation may be dealt with successfully by removing the obstruction and placing the obstructed cup in the nest; in this case a larger cup replaces a smaller one, and if the same strategy is adopted consistently, the largest of the cups in the array will be placed in the nest. Provided this is not subsequently removed, the next largest cup will eventually be put into this one, and so on. Sometimes, however, the cup which has been placed correctly in the nest by this laborious procedure is subsequently removed. This happens when there are several obstructing cups to remove, and the child goes on to remove those larger than the obstructed cup, in addition to those that are smaller. Some children who keep on doing this get into irresolvable difficulties. The difficulty can be dealt with by using some technique to check each time whether the appropriate point has been reached, such as trying the obstructed cup to see if it will go in after each removal, or using a visual cue. Alternatively, this problem can be avoided by adopting a strategy which reduces the number of cups to be removed at each obstruction situation; such a strategy is removing cups before they cause an obstruction.

The children who use these strategies in this situation appear to have adopted the aim, suggested to them, of nesting the cups together, consecutively. Equally the behaviour of those whose inadequate strategies prevented this solution appeared to be directed towards the end-point of arranging the cups regularly in some other way,

in smaller nested sets. Those who piled such sets on top of one another, or who continued to place cups in obstructed ones, which they left where they were, are approximating to the end-result of nesting the cups, within the limitations of their strategies. Most of the children disposed of the cups in some way or other, in or on others. The exceptions were those who only placed cups in and out of others, and left them all singly as at the start.

This raises a general point, concerning the development of behaviour which has the outcome of arranging a set of objects in a regular manner, starting with a scattered array. Putting pegs in holes, objects in one container, rings on a stick, are further examples of such behaviour, which may be contrasted with sequential play (picking up and putting down objects, leaving an irregular array as before) and intermediate behaviour, to which Piaget (1955) has drawn attention, of making spatial arrangements (putting an object in, on, alongside another) but immediately undoing the arrangement, and continuing the in-out, on-off, beside-and-away behaviour. This latter behaviour was observed with the cups problem in the present study and with the box and bricks and pegboard material given to the S.S.N. group. The behaviour of putting objects into or on to others into which they fit is so commonplace an activity in young children that it may be doubted whether it requires explanation, other than a compliance with an adult instruction or imitation of an adult's action. The "in-out" behaviour is, however, shown despite instructions to "put-in". Furthermore, Piaget (1955) has analysed the arranging and disarranging behaviour, and concluded that it is comparable in complexity to the other manipulative behaviour patterns (tertiary circular reactions) and problem-solving behaviour by which he characterizes his fifth sensori-motor phase. This "in-out" pattern has been observed among children classified into Piaget's fifth phase, at least among S.S.N. children (Woodward, 1959). The question may thus be raised of whether children processed from the "in-out" to the "in" pattern when they handle sets of objects and have something into which they will fit.

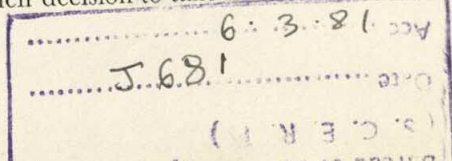
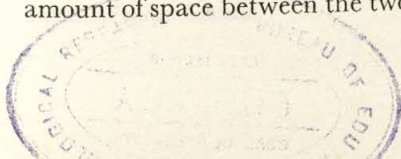
The two behaviour patterns may be distinguished on two counts. One is whether the placing activity is continued with other objects when a few have been placed, or whether the reverse action is performed (some are taken out). The other is in the conditions that terminate the sequence. When the putting in activity is continued until all elements are placed, the sequence is terminated when there are no more to put in: the sequence has a definite end-point. The "in-out" pattern has no such end-point; it could continue indefinitely. The terminating condition is presumably some other "interest" or "boredom" or interruption. The "putting-in" behaviour may then be interpreted as being directed towards an end-point. In the case of the cups material, this (in the simplest form) is placing cups in or upon one another upwards in one or more unstable piles, or placing a cup in one other in the collection. The latter is seen most clearly when an obstructed cup is tried on others in the array until it goes into one. When obstructing cups are removed and replaced by the obstructed one, the behaviour appears to be directed towards the end-point of placing the particular cup taken from the array into another particular one, at the top of the nest, not in any one as with the inadequate strategy. This would appear to be a higher level of "direction towards an end-point".

Once children do continue a repetitive putting-in, or putting-on, sequence to an

end-point given by the task, they are unable to reverse the action upon adult instruction. Luria (1961) has drawn attention to the fact that children of 1½–2 yr who are putting rings on a stick cannot start taking them off, upon an adult instruction to do so. That children cannot re-adopt the "in-out" or "on-off" pattern argues that it has been transcended by a "putting-in" or "on" pattern. The main task used in the investigations reported by Luria was that of pressing a bulb while a light was on and of refraining from pressing it while the light was off. Young children, however, went on pressing it in both conditions, instructions not to press while the light was out either resulting in more intensive pressing, or in a cessation of activity altogether.

The behaviour of children, in the nesting problem, who went on removing cups, inappropriately, once they had started, is similar to this. It would appear that children who can direct a sequence of actions towards an end-point, defined by performing a placing action with a set of objects until no more are left, cannot stop before they reach that end-point, if the conditions of the task demand it. It may be useful to interpret this behaviour and that of the children who adopt some strategy for stopping at the appropriate point, in terms of the concept of "plan", and the associated TOTE unit, as put forward by Miller, Galanter and Pribram (1960), and discussed in terms of neuro-physiology by Pribram (1960). The concept of "plan" was advanced in order to attempt to close the gap between cognition and action: "envisaging" or "representing" an end-result of a sequence of actions cannot produce the actions themselves. As a computer cannot operate without a programme, so man cannot act without a plan. Further computer analogies are used in the form of "tests" and "stop-rules", the TOTE unit being an alternation between "test" and operation (overt action or internal process) until the conditions of the test are satisfied, whereupon that activity ceases (Exit). The behaviour of children who go on removing all the cups may be interpreted in terms of an external stop-rule: no more cups to take out. That of those who stop at the appropriate point may be interpreted in terms of a stop-rule generated by the child himself, who also constructs a test. The behaviour of children who "try" the obstructed cup on top of the next cup, after removing each one, may then be regarded as an interpolated "testing action". When children stop at the appropriate place without such an observable action, the "testing" action of looking may be inferred. A further inference is that the "test" that is constructed concerns the relations of the top two cups in the nest. Two cups of consecutive sizes fit closely together and a small rim of the inner one rests on the rim of the outer one, such that the inner one is raised about 0.2 in. above the outer one. When the inner cup is not the next in size, its rim is below that of the outer cup (the distance being greater, the larger the difference in height between the cups), and there is a space between the sides of the two cups, which is also larger, the greater the difference in diameter of the two cups. These differences are presumably the visual cue for going on or stopping.

They are also, presumably, the visual cues used by children who remove incorrectly placed cups before they obstruct others (strategies 2 and 3). The statement of the 5-yr-old who said "It didn't come up to there, so I took it out . . ." supports this interpretation. Similarly the action of some children, who move the inner cup about against the sides of the outer one, suggests that they are being guided by the amount of space between the two cups, in their decision to take it out or leave it. This



behaviour might also be interpreted as constructing a test. It is noteworthy that cups of the correct size were not removed, though some children left in a cup only two sizes different while removing others that differed by a larger amount. They had presumably imperfectly learned the "cues for fitting and not-fitting" that formed the basis of the "test". It may also be noted that a cup that was placed by strategy 4 (removing obstructing cups) was not removed at once, even if it was not the next in size. Either another strategy cannot be adopted for a particular object immediately the end-point of adopting another with it has been reached, or strategy 3 had not been discovered.

It may be postulated that the learning of the necessary cues for the adoption of strategy 3 occurs during the course of finding means for dealing with the problem of stopping at the correct place when removing cups. Behaviour shown by some children suggests a possible way in which a transition from strategy 4 to strategy 3 is achieved. As they were bringing a cup towards the nest, they removed a cup in the nest and replaced it by the one they held, without first placing it on top and seeing it obstructed.

Some children (all over 4½ yr in the normal groups) used strategies 2 or 3 every time they had taken a cup of the wrong size from the array. This suggests that, at a certain point in development, children adopt a higher-level strategy as a result of an anticipation of the problems that would otherwise result. The relation of such anticipation to other previous experience rather than to experience with the particular material requires further investigation. A higher level process may be involved.

When children select most of the elements in order of size, without first handling the material, it may be inferred that they look over the elements. It may be asked whether they have developed a yet higher level process or plan. Are the actions of the younger children guided by a plan of taking the cups one by one, the nearest first, in order to achieve the envisaged end-result of nesting them together (as they saw them), while the actions of the older are guided by a higher level plan of selecting the elements in order of size, in order to achieve this?

Such selection in order of size, with this material, is not evidence for operational seriation, in Piaget's sense. The cups stand on an even base on the table, and only one end has to be attended to for perception of the differences in size. Moreover, none of the children, with an appropriate problem, showed evidence of operational seriation.

In view of the current controversies concerning the relation of language usage to changes in solution of problems of the type devised by Piaget and Inhelder (e.g. Bruner, 1966; Inhelder *et al.*, 1966), it may be noted few children mentioned size as the basis of their selection, and none described precisely the action of taking the largest. Thus, whereas 5-yr-old children are able to state subsequently the basis of their selection in two-choice situations, with a problem of double-alternation (Hunter and Bartlett, 1948), of double-sign (Heidbreder, 1928) and of transposition (Kuenne, 1946), they are unable to do so in a multiple-choice situation when the correct element is a different object on each move, and the correct feature is determined by reference to the other objects.

With regard to inferences concerning successively higher-level processes, it may be necessary to distinguish between behaviour when a problem is new, and behaviour that results from much practice with that problem. Normal children of 4½ yr and over were significantly differentiated from those younger by selection in order of size within their first three trials and the adoption of strategies 2 and 3 (removing wrongly selected cups) from the first occasion onwards on all trials. Yet two normal children after more trials achieved selection by size, as did some S.S.N. children who were highly practised. These children were not comparable in development to normal children of 4½ yr, in terms of Piaget's intuitive regulations, nor were those who consistently adopted strategies 2 and 3. Thus it may be postulated that children, with the processes that Piaget terms intuitive regulations, can, by either looking over the elements or minimal experience with the problem, adopt strategies which "pre-intuitive" children can only adopt after much practice.

A number of S.S.N. children perfected strategies 2 and 3, and others perfected strategy 4, without selecting any elements by size. Conclusions cannot be drawn from data derived solely from S.S.N. children, in view of the high incidence of cerebral pathology among them. Nevertheless one normal child, aged under 3 yr, succeeded without selecting any elements by size. It is thus a reasonable postulate for further study, that children in their second and third years, who direct a sequence of actions towards a given end-point, would with sufficient practice, adopt adequate strategies (involving for example learning cues for "fitting and not fitting" and the generation of "stop-rules") to deal with difficulties arising from failure to select among the elements, and that children of 3 and 4 yr, given sufficient practice, would learn to select appropriately among the elements.

One reason for observing the behaviour of children, when handling complex sets of material, was to determine what are the appropriate questions to ask concerning early cognitive development. The material used had a high interest value for young children, even for those in the S.S.N. group with behaviour disturbance so severe that their co-operation could not be obtained for tasks that required demonstrations or verbal instructions. Thus further investigation, along the lines suggested above, may lead to some means being derived for assessing the cognitive development of "unassessable" children.

SUMMARY

A complex problem, consisting of 12 graded elements, was presented to normal children of 1½–5 yr and to severely subnormal children, in order to attempt to elucidate some aspects of early cognitive development. Strategies adopted have been analysed in terms of the plan and TOTE unit concepts proposed by Miller *et al.* It is suggested that an early phase when a repetitive behavioural sequence is directed towards an externally given end-point, is followed by one in which the sequence is terminated at the appropriate point by the interpolation of a manipulative or observing action after each repetition.

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ABSOLUTE AND RELATIVE CODES IN YOUNG CHILDREN

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INTRODUCTION

WHEN SOMEONE has to learn to discriminate between two stimuli which vary along some continuum such as size and only one of which is consistently rewarded, he can apply two kinds of code to solve the problem. One of these is an absolute code, the other a relative code. An absolute code would register only the actual sizes of the two stimuli and its output would be, for example, that the correct stimulus is 6 in. and the other 4 in. On the other hand, the relative code's output in this case would simply be that the "larger" of the two is correct. The former output would be more or less confined to the original absolute values, while the latter output could be generalized to an infinite number of pairs of values along the continuum.

For some time now there have been suggestions that young children initially can use an absolute code and that they do not acquire the ability to code relations until some time between the age of roughly 5 and 8 yr. The suggested change has been attributed to the acquisition of verbal relational terms and their spontaneous use in problem-solving situations. This absolute to relative developmental hypothesis, which has considerable theoretical and educational significance, is based on the results of transposition experiments.

The transposition experiment is designed to test the subject's ability to code relations. The experiment has two stages, in the first of which the subject discriminates between, for example, two sizes, one only being rewarded. In the second stage the subject is given two more sizes, removed along the size continuum. The question asked is whether he will continue to respond on the same relative basis as in the first stage, that is, whether he will still respond to the larger of the two stimuli, if it was the larger one which was correct in the initial first-stage pair.

Transposition experiments were initially introduced by Kohler (1929), who actually showed that young children (as well as a wide variety of other subjects) transposed relations very successfully to transfer pairs whose absolute values were close to those of the initial training pair.

However, his conclusion that young children can transfer relations seemed to be undermined by the later results of Kuenne (1946) and of Alberts and Ehrenfreund (1951). They found that 4-yr-old children do not transfer a relative response to the second stage, if there is a considerable absolute difference between the first-stage and the second-stage pairs. Here, their performance with the second-stage pairs is at chance level. This failure to transpose a relation to a "far" test has become known as the "distance effect". The phenomenon has often been confirmed in young children (Johnson and Zara, 1960; Sherman and Strunk, 1964) and has generally been taken to show that young children code not relative but absolute values. On the other

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hand, Kuenne (1946) and Alberts and Ehrenfreund (1951) also showed that by the time they are 8 yr, children convincingly do transpose relations even to "far" tests very well. Thus they concluded that children proceed from absolute to relative responding as they grow older.

This conclusion can be severely criticized. In the first place chance level performance in the "far" test does not demonstrate the *presence* of an absolute code. Indeed, chance level performance does not really demonstrate the presence of any code: it may very well have been the result of the young children applying no code at all through bewilderment at the abrupt change between the first and second stage of the experiment. Furthermore, the *absence* of the relative code in young children is not even effectively shown by their chance level performance on "far" tests. The alternative explanation is that these children code not only the relation between the two stimuli but also the relations between these stimuli and their background. This second kind of relation would be severely disrupted in a "far", second-stage test, a disruption which could very well bewilder the child and lead to chance level performance. There is evidence to support this alternative. Bryant (1969) has already shown that young children often do code relations between stimuli and their background, and Riley (1958), with rats, found the distance effect only when the background was unchanged throughout the experiment, and not when it was changed so that the relations between stimuli and background were always constant. In the latter case, rats transferred relations very well to a "far" test.

Two questions, therefore, require immediate answer. The first is whether young children do use absolute codes, since as yet we have no positive evidence for the existence of such codes. The second is whether they find an absolute code easier than a relative code, since as yet there is no effective demonstration that they cannot code relations.

The questions can very easily be answered in a single-stage discrimination experiment in which children have to learn either an absolute or a relative task. Both tasks would involve two pairs of stimuli, each pair being presented on half the trials. In one task the same absolute value would always be correct, in the other the same relative value. For example, if one pair consisted of two sizes, A and B, and the other of B and C (where $A < B < C$), then an absolute test would be to learn, for example, that B was correct in both pairs. On the other hand, in a relative task B might be correct in the AB pair and C in the AC pair. In the first case the same absolute value is always correct, in the second the same relative value.

If Kuenne (1946) and Alberts and Ehrenfreund (1951) are right the absolute task should always be an easy one, while the relative task should be difficult, particularly if the two pairs involved were far removed from each other along the continuum. The experiment, therefore, by testing separately both for absolute and relative codes and making a direct comparison between them possible, provides a more satisfactory test of their hypothesis than the transposition experiment.

METHOD

Subjects

The subjects were 120 nursery school children (mean age: 4 yr; age range: 3 yr - 4 yr 11 months), taken from nursery schools in Oxford. These were divided into 3

main groups: (i) the *Relative* group who were given a problem, which could best be solved by a relative code (mean age: 4 yr, age range: 3 yr 1 month–4 yr 11 months); (ii) the *Absolute* group, who were given a problem which could best be solved by an absolute code (mean age: 4 yr 1 month; age range: 3 yr 5 months–4 yr 10 months); and (iii) a *Standard Control* group, who were given a simple discrimination which involved only one pair of sizes and which therefore could be solved either relatively or absolutely (mean age: 3 yr 10 months; age range: 3 yr–4 yr 9 months). There were 36 subjects in the first two groups and 48 in the third.

Material

The stimuli were black cardboard squares of different sizes, which were always presented two at a time. The subject was required to choose the correct one of the two sizes. The actual sizes used were identical to those of Kuenne's (1946) experiment. They constituted a series whose steps proceeded in area ratios of 1 : 1.8. Table 1 gives the actual sizes, in area and side length, of the 6 stimuli.

TABLE 1. SIZES OF THE CARDS USED IN THE EXPERIMENT

Card No.	Area S (in.)	Side S (in.)
1	2.0	1.41
2	3.6	1.89
3	6.5	2.54
4		
5	21.0	4.58
6	37.8	6.10
7	68.0	8.24

Design

Table 2 gives the basic design of the experiment in terms of the actual stimuli used.

Table 2(a) demonstrates the basic point of the experiment which is a direct comparison between relative and absolute groups. Both groups are given two pairs of sizes (each pair appearing on half the trials). For the *Relative* group the correct and incorrect stimuli always bear the same relation in both pairs: the correct stimulus is always either the "larger" in both pairs or the "smaller". For the *Absolute* group the connection between pairs is an absolute one. In some cases (absolute positive subgroups) the correct stimulus for this group is either identical in both pairs, or where this is not possible, the two most similar stimuli in the two pairs are the correct stimuli. In other cases (absolute negative subgroups) it is the incorrect stimulus which is either identical in both pairs or where this is not possible the two most closely similar stimuli in the two pairs are the incorrect stimuli.

It should also be noted that in both groups 24 subjects learned a *Near* problem, while 12 learned a *Far* problem. In the *Near* problems the two pairs used were only 1 step down the continuum from each other and had one stimulus in common. In the

TABLE 2. STIMULUS PAIRS GIVEN TO THE DIFFERENT GROUPS

Relative		N	Absolute		N
S pairs			S pairs		
(a) <i>Relative and absolute double discrimination groups</i>					
Near	7*	6	7	6*	
	6*	5	6*	5	6
	3*	2	3	2*	
	2*	1	2*	1	6
	7	6*	7*	6	
	6	5*	6	5*	6
	3	2*	3*	2	
	2	1*	2	1*	6
	7*	6	7	6*	
	2*	1	2*	1	6
Far	7	6*	7*	6	
	2	1*	2	1*	6
(b) <i>Standard groups</i>					
Large		N	Small		N
1	2*	6	1*	2	6
2	3*	6	2*	3	6
5	6*	6	5*	6	6
6	7*	6	6*	7	6

* Correct stimulus.

Far problems the actual values of the stimuli in the two pairs were very different, the pairs being separated by 5 steps along the continuum.

The distinction between Near and Far problems was necessary because of the distance effect. It has been suggested that young children find it particularly hard to transfer a relation far down a continuum. This hypothesis would predict maximum difficulty in the relative problem, when the two pairs were very different from each other. Therefore, both Relative Near and Relative Far problems were given to different subjects.

Since the experiment was a direct comparison between Relative and Absolute subjects, the distinction was also instituted among the Absolute subjects, 24 of whom were given a Near problem, and 12 a Far problem. Table 2(a) shows that in the

absolute Near problems either the correct or the incorrect stimulus was always identical, and that the problem could therefore be solved by learning to approach or to avoid specific absolute value. In the Far absolute problems two values, 6 and 2, were either both correct or both incorrect. Although these two values (6 and 2) are not absolutely the same, they are in absolute terms the most similar, and the Kuenne hypothesis would be that an absolute coder would respond on the basis of absolute similarity in this case. At any rate, those who claim that young children are capable of an absolute code and incapable of a relative code could under no circumstances predict that the Relative Far problem would be easier than the Absolute Far problem, and could not explain this result if it occurred.

Finally, the Standard Control group provided a baseline, whereby the two groups could be compared. Table 2(b) demonstrates the stimulus combinations used in these groups. The single stimulus pairs were the same as the pairs used in the double relative and absolute discrimination tasks.

Summary of design

The experiment consisted mainly of a direct comparison between two experimental groups, Relative and Absolute, both of whom learned one size discrimination problem involving two pairs of sizes. For the Relative group, the correct and incorrect stimuli were always characterized by the same relation in both pairs. For the Absolute group the connection between either the correct or the incorrect stimuli of the two pairs were in absolute terms. Subjects in both groups learned either a Near problem in which the two pairs were separated by only 1 step along the continuum, or a Far problem in which the two pairs were separated by as much as 5 steps.

If the Kuenne-Alberts and Ehrenfreund hypothesis of a development from absolute to relational coding is correct, the Absolute group should learn faster than the Relative group, and the Relative group should perform particularly badly in the Far problems. On the other hand according to the alternative hypothesis (discussed in the Introduction), that young children do code relations, but are put off by the two-stage nature of the traditional transposition experiment, the Relative group should learn quite easily, and there should be no appreciable difference between Relative Near and Relative Far problems.

Procedure

Each child was seen in up to three 15 trial sessions in a room in the Nursery. (The experimenter had previously spent some time in the Nursery school in order to establish rapport with the children.) During the session the experimenter and subject sat side by side at a table.

First, the experimenter told the subject that they were going to play a game. She then showed the child one pair of the sizes and placed each card into a slot in a rectangular piece of wood; these two pieces of wood lay side by side on the table which was in front of the subject. Behind each card was a box, and the ring was actually hidden in the box which was behind the correct card.

The experimenter's instructions were as follows: "I am going to hide the ring behind one of the cards, sometimes it is here (experimenter pointing to one side) sometimes it is here (pointing to the other side). The cards will tell you where the

ring is. So look at them. I am going to hide the ring a lot of times and I want you to find the ring every time I hide it. Now let's try. Close your eyes (experimenter shuffles boxes). Now open your eyes. Look at the cards. I wonder where the ring is hiding. Can you tell me?"

On the first trial but on no subsequent trial, if incorrect, the child was directed to the correct card. As soon as the choice was made the next trial began.

Since each session consisted of 15 trials, the maximum number of trials for each subject was 45. If, however, the subject managed to make 9 correct choices within 10 successive trials he was assumed to have learned, and the task was stopped.

The position of the correct stimulus was varied in a Gellerman series (Gellerman, 1933). Also, in the Absolute and Relative groups the order of the two pairs from trial to trial was determined in the same way.

The interval between the three sessions tended to be of the order of 1 day and was never more than 2 days.

RESULTS

The main dependent variable was the number of errors made during the 45 trials. The number of subjects in each group who reached criterion was also noted.

Error scores

Overall performance of the relative absolute and standard control groups. The overall error scores for the three groups are shown in Table 3. Here the scores for the Absolute and Relative Far Groups are collapsed across Near and Far subgroups, because no such subgroups existed in the Standard Control Group. Therefore, in order to make a comparison between all three groups the Near/Far distinction was temporarily shelved.

TABLE 3. MEAN AND STANDARD DEVIATION ERROR SCORES FOR RELATIVE ABSOLUTE AND STANDARD GROUPS

Group	Standard control (<i>N</i> = 48)	Relative (<i>N</i> = 36)	Absolute (<i>N</i> = 36)
Mean	11.0	14.0	18.2
<i>SD</i>	9.1	8.2	6.9

Table 3 demonstrates (i) that the Relative Group made fewer errors than the Absolute Group and (ii) that the Standard Group made fewer errors than either of these two groups. These scores were subjected to a one-way analysis of variance, which yielded a significant Groups term ($F=7.61$, $df=2$, 117, $p<0.005$). This was then further analysed by a Kramer extension of multiple range test (Kramer, 1956). This further test established only a significant difference between Standard Control and Absolute Groups. Thus one cannot conclude from the analysis of the

overall error scores either that the Relative task is easier than the Absolute task, or that the Standard task is better than the Relative task. However, the next analysis provides evidence that the former of these two negative conclusions is probably wrong.

Near/Far differences in the absolute and relative groups. This analysis dealt with the difference between Near and Far subgroups, and as such was confined to the scores of the Relative and Absolute Groups since the Standard Control Group was not divided in this way. Table 4 shows the scores for the two subgroups in both groups.

TABLE 4. MEAN AND STANDARD DEVIATION ERROR SCORES FOR RELATIVE, ABSOLUTE NEAR AND FAR SUBGROUPS

Group	Relative		Absolute	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Subgroup				
Near	13.7	8.2	17.7	7.3
Far	14.7	8.3	19.2	5.5

This table shows that although more errors were made by the Absolute than by the Relative Group, there seemed to be little difference between Near and Far subjects in either Group.

The scores were subjected to a two-way analysis of variance in which the main terms were Groups and Subgroups. The only significant term in this analysis was the Groups term ($F = 5.25$, $df = p < 0.025$). Neither the other main term nor the interaction approached significance.

Thus, this analysis shows that the Relative task was actually easier than the Absolute task. The apparent discrepancy of reaching this conclusion from the second but not from the first analysis is probably due to the fact that the Near/Far distinction removed some variance which in the first analysis had simply contributed to the error variance.

Thus, taken together one may conclude from the two analyses that the Relative task is significantly easier than the Absolute task for young children, that the Standard Control task is easier than the Absolute task, and that the Standard Control task, in which only one pair is presented is not significantly easier than the Relative task where two different pairs are presented but which can be solved by coding a simple relation.

Small and Large stimulus correct. Another question investigated was whether there was any difference in error scores between groups required to choose the larger or smaller stimulus.

The data for relative and standard groups only could be included in the analysis

of this question since in the Absolute Group the subject had to learn to choose the larger stimulus on some trials and the smaller stimulus on others. The relevant data is shown in Table 5. This table shows very little difference between subjects for whom the correct stimulus was the larger one and those for whom it was the smaller.

TABLE 5. MEAN AND STANDARD DEVIATION ERROR SCORES FOR RELATIVE STANDARD SMALL AND LARGE SUBGROUPS

Group	Relative		Standard	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Subgroup				
Large	14.2	8.4	11.4	9.6
Small	13.8	8.0	10.7	8.4

Analysis of variance with variables Size (Large/Small) and Group (Relative/Standard) showed that whether the large or small stimulus was correct did not determine the ease of solution of Standard and Relative tasks.

Absolute positive vs. absolute negative conditions. A further question investigated was whether it was more difficult for a young child to solve the Absolute task when a response to a particular stimulus (Absolute Positive Subgroup) was required than when not to respond to a particular stimulus (Absolute negative Subgroup) was the required behaviour. This question concerned only the Absolute group data. The scores are presented in Table 6.

TABLE 6. MEAN AND STANDARD DEVIATION ERROR SCORES FOR ABSOLUTE POSITIVE AND ABSOLUTE NEGATIVE NEAR AND FAR SUBGROUPS

Group	Absolute negative		Absolute positive	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Subgroup				
Far	21.0	2.1	17.3	7.0
Near	15.8	9.0	19.6	4.2

The table shows that there was very little difference between subgroups. The scores were subjected to an analysis of variance with a breakdown between Absolute positive and Absolute negative subgroup with Near and Far problems. No significant differences were found at all.

Number of subjects reaching criterion

Overall performance of the relative absolute and standard control groups. The number of

subjects reaching criterion within the 45 trials in the three groups were as follows: *Relative Group*—22 out of 36 (61%), *Absolute Group*—9 out of 36 (25%), *Standard Control Group*—32 out of 48 (67%). This pattern confirms the conclusion that the Relative and Standard tasks on the one hand were much easier than the Absolute on the other. A χ^2 test showed a significant difference between Groups in terms of these figures ($\chi^2 = 15.82$, $df = 2$, $p < 0.001$).

Near/Far differences in the absolute and relative groups. The number of subjects reaching criterion in the four groups were as follows: *Relative Near*—14 out of 24 (58%), *Relative Far*—8 out of 12 (67%), *Absolute Near*—7 out of 24 (29%), *Absolute Far*—2 out of 12 (16.6%). A higher percentage of subjects reach criterion in the Relative Groups than in the Absolute Groups in both Near and Far conditions. A χ^2 test showed a significant difference between Relative and Absolute groups ($\chi^2 = 10.3$, $df = 3$, $p < 0.02$) confirming the significant error score difference between Relative and Absolute groups.

Summary of results

1. The Relative task was easier than the Absolute task.
2. The Standard task was also easier than the Absolute task.
3. No significant differences were found between the Relative and Standard tasks.
4. No significant effects were associated with the Near/Far distinction either in the Relative or in the Absolute groups.

DISCUSSION

This experiment demonstrates that young children are very well able to code relations, and also that they find it more difficult to code absolute values than relations. These results must mean that the development from absolute to relative codes, suggested by Kuenne (1946) and Alberts and Ehrenfreund (1951), and widely accepted in learning theory does not, in fact, take place. If there is a progression from one code to the other it would have to be in the opposite direction.

This is the first convincing demonstration that young children can code relations in learning tasks and that they have difficulty with coding absolute values. Other similar experiments such as that of Graham, Ernhart, Craft and Berman (1964) with children and of Meyer (1964) with rats have not included the necessary "far" relative task and the original Kohler (1929) experiments were only with near tests. Our experiment did include "far" tasks, and 4-yr-old children solved them with great ease. Its results support the original Gestalt hypothesis (Kohler 1929) strongly.

The significance of these results lies not only in their demonstration that the familiar learning theory view of one aspect of cognitive development is untenable but also in their implications for further work with young children. One implication is that the usual emphasis in the study of relational codes should be changed. Up till now research has concentrated on the question of the presence or the absence of these codes. This question, at least as far as 4-yr-old children and the size continuum are concerned, can now be regarded as settled. What should be investigated is, (i) the way in which this relational code affects the behaviour of young children, and (ii) the exact nature of the relation coded.

The first question is really an attentional one. It was argued in the introduction that a breakdown of relational transfer in a "Far" transposition test may simply be due to the fact that the subjects had coded not only the relations between the stimuli but also the relation between the stimuli and their background, and that they were bewildered by the abrupt change in the second kind of relation between the first and the second half of the experiment. This view is certainly supported by the excellent performance of the young children in relative "far" tests in our single-stage experiment. One must conclude that, if this view is true, the older children who did transpose successfully to the "Far" test in Kuenne's and Alberts and Ehrenfreund's experiments, were not put off by the change in relation between the stimuli and their background. It follows that they were concentrating on one kind of relation, the correct one in this case, and not on the other. This would mean that the important developmental change may be an increasing ability to restrict attention to the relevant kind of relation. In other words, children do not acquire the ability to code relations (they have this already) but rather the ability to limit the relations to which they attend in any one situation. Such a view is easily testable.

The second question is whether the relation that is coded is a ratio or not. In this experiment, as indeed in all traditional transposition experiments, the ratio between pairs of sizes was constant in every case. This means that either the children learned simply the crude relation, for example, that the larger was the correct stimulus, or they learned in addition something to do with the actual ratio, which in our experiment was 1 : 1.8. The latter kind of learning seems inherently implausible, but we have no data to exclude it. Nor is it absolutely inconceivable that something is learned about the ratio. It would not be surprising if a child who had learned to respond to a stimulus five times larger than another would not continue to respond to "larger" with a second pair of which the larger was only 1.5 times the larger. There is as yet no clear evidence on this question, and yet it is an important one educationally as well as theoretically, since a teacher who is dealing with quantities will surely benefit by knowing more about the exact nature of the relations which her pupils can take in and remember.

There is another relevant topic, which is also significant educationally and, on which we do have some good evidence. This is the question of the ability to co-ordinate two separate quantity relations such as $A < B$ and $B < C$, (to reach an interential judgement that $A < C$), an ability which is fundamental to the understanding of even the simplest bases of measurement. It has recently definitely been shown that children as young as 4 yr can achieve this co-ordination provided steps are taken to ensure that they are able to remember the judgements which they have to co-ordinate (Bryant and Trabasso, 1971). This result not only confirms that very young children are able to code relations, but also demonstrates how this relational coding must be of real importance in early educational situations.

SUMMARY

This paper considers whether pre-school children can perceive and remember quantity relations, and compares the relative ease of relational and absolute codes for these children. The methods used in former experiments which seem to suggest that young children cannot code relations such as "larger" and "smaller" are

criticized. An experiment with 120 4-yr-old children is described which avoids the weaknesses of these earlier experiments. The results of this experiment, which directly compares relative and absolute tasks, strongly suggest, (i) that pre-school children code quantity relations very well, and (ii) that, contrary to previous suggestions, these children find it easier to code relations than to code absolute values.

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THE CLINICAL APPLICATION OF THE LOKARE'S MODIFIED JUNIOR MAUDSLEY PERSONALITY INVENTORY WITH PARTICULAR REFERENCE TO 8- TO 12-YEAR-OLD CHILDREN

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INTRODUCTION

A PREVIOUS report of a study (1966) on psychiatric disorders in children and their place in a two-dimensional framework of personality description, showed a remarkable degree of concordance between the Lokare's Modified Junior Maudsley Personality Inventory (LMJMPI) findings with psychiatric description, when this was carried out independently by expert judges. It presented evidence to support the hypothesis that the doctrine of dimensionality (Eysenck, 1953) and the notion that any particular position in the two-dimensional framework of extraversion and neuroticism is due to a combination of quantitative variations along the two continua labelled "introversion-extraversion" and "neuroticism" (stable-unstable) apply also to the psychiatric classifications of neurotic disorders in children. The report was however based on a limited investigation of 58 clinic children and 164 controls, boys and girls, between 13 and 15 yr of age who had completed the LMJMPI. The present study is an extension of the earlier investigation with special reference to children between 8 and 12 yr of age who completed the LMJMPI.

METHOD

Subjects

The LMJMPI was administered to all the subjects included in this study. The clinical sample consists of 60 boys and 31 girls between the ages of 8 and 12 yr who attended the children's clinic at St. James' Hospital. This includes all referrals to the clinic except those who showed E.E.G. abnormalities suggestive of epilepsy or organic brain syndrome. The normal controls were 139 boys and 141 girls from the local primary, secondary and grammar schools, matched for age and intelligence, and had a reading ability of not less than a reading comprehension age of 9 yr. All the clinic children were actually tested for I.Q. and reading ability by the author and his colleagues. The normal controls were selected on the basis of an independent study (an investigation carried out to study the relationship of I.Q. to reading ability—yet an unpublished study), 11+ results and the teacher's report on actual reading ability tests. The clinical sample was sub-divided into four groups according to the psychiatrists' findings and diagnosis. The following is a detailed description of the four sub-divisions of the clinical group.

Group A Anxiety, anorexia nervosa, depression, obsessional and phobic tendencies, suicidal with schizoid type of episode.

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Group B Hysterical type of reaction, impulsive, and/or violent (psychopathic behaviour?).

Group C Delinquency and adolescent maladjusted behaviour, both generally related to handling at home, and/or relationship difficulties with emotional problems.

Group D Aberrant behaviour precipitated by over-dependence, extreme deprivation, over-protection or parental misinterpretation of normal behaviour.

Because of the general emphasis in child psychiatry on individual diagnosis, with little attempt at diagnostic labelling, as compared with adult psychiatry, the classification of clinical subjects into four groups, namely A, B, C and D, each labelled with a description of psychiatric diagnosis under classified symptomatology was inevitable.

Test

LMJMPI, so named to distinguish it from different versions by others, is a modified version of the Junior Maudsley Personality Inventory (JMPI, unpublished) originally designed by Furneaux and Gibson (1961). The JMPI consisted of some re-arranged and some rephrased items of the Pintner's Children's Personality Inventory (1938), so as to make it less sensitive to bias; more directed to the assessment of neuroticism and extraversion and more easily comprehensible to the English school children. Later a modified and revised version of the JMPI was published under the title *The New Junior Maudsley Inventory* to measure the personality dimensions of neuroticism and extraversion. Eysenck's (1947) definition of these concepts, neuroticism and extraversion, has been used throughout. The LMJMPI retains a majority of the items of the JMPI, except that a few items were rephrased and re-arranged, and also a "Lie" scale was added. The "Lie" scale was included so as to obtain a rough and ready measure of test taking attitude, and showed up such things as falsification, deliberate or otherwise, lack of comprehension, and carelessness.

RESULTS

Validation and cross validation

The analysis of records of the normal control group showed no clear pattern of relationship between the scores on the Extraversion (*E*) scale and scores on the Neuroticism (*N*) scale. This is suggestive of two nearly orthogonal scales which are reasonably homogeneous. The scales may therefore be regarded as measuring different personality aspects. These findings are in agreement with those of Furneaux and Gibson (1961).

There was no significant correlation between the *L* and *E* scales, but a small but significant negative correlation ($r = -0.21$) was observed between the *L* and the *N* scales. This latter finding is similar to that obtained by Gibson (1964) and Eysenck (1965), but is not as high as the correlations found by these authors.

The mean and the standard deviations for the normal control groups were computed for each age group, girls and boys separately, and combined for *N*, *E* and the "Lie" (*L*) scale and are presented in Appendix I, II and III. No significant differences between various age groups were found, except in the case of 8-yr-old girls, and hence

combined results for all children between 8 and 12 yr of age are presented in Appendix VII for *N*, *E* and *L* scales respectively.

Though there are slight differences in the split half reliabilities and test-re-test reliabilities between age groups, they are not large enough to be significant nor of practical importance. Hence the results of the split half reliabilities and test-re-test reliabilities are presented in a single combined Table 1 and not separately for girls and boys or for various age groups.

TABLE 1. SPLIT HALF AND TEST-RE-TEST RELIABILITY OF THE TWO SCALES OF THE LMJMPI BASED ON THE SCORES OF 280 NORMAL BOYS AND GIRLS FROM 8 TO 12 YEARS OF AGE

	Split half reliability	Test-re-test reliability
Neuroticism	0.80	0.82
Extraversion	0.67	0.82

The results of the split half and test-re-test reliabilities for 13-15-yr-old children shown in Table 2 are reproduced here for ready reference from the author's own earlier study.

TABLE 2.* SPLIT HALF AND TEST-RE-TEST RELIABILITY OF THE TWO SCALES OF THE LMJMPI BASED ON THE SCORES OF 164 NORMAL BOYS AND GIRLS FROM 13 TO 15 YEARS OF AGE

	Split half reliability	Test-re-test reliability
Neuroticism	0.77	0.96
Extraversion	0.82	0.79

*Reproduced in part from the author's own paper presented at the 6th International Congress of Child Psychiatry, 1966, Edinburgh, Scotland.

The mean scores for *N*, *E* and *L* scales for both sexes show a gradual dropping off of the *N* scores with age for both sexes. Though the *N* scores in girls of 8 are high, with increasing age the differences seem to be reduced to almost nothing, and hence fail to support Eysenck's (1965) findings that girls become more unstable with increasing age. There is a significant difference between the mean *E* scores for girls and boys of 8, boys being higher. With age the mean *E* score differences level out, but there is no gradual dropping off of *E* scores with age as seen for the *N* scale. This differs from Eysenck's (1965) findings that boys are more extraverted than girls, but further supports the findings of Furneaux and Gibson (1966). There is no significant difference in the mean scores for the *L* scale for girls and boys, but the *L* scores for younger children are higher than for the older children and hence there is a gradual dropping off of the *L* scores with age. These results differ from Gibson's (1964) findings that girls tend to score higher on the *L* scale, but are similar to the findings

of both Furneaux and Gibson (1966) and Eysenck (1965) in showing a slight shift from a high "Lie" score in the young children to a low one in the older children.

Appendix IV, V and VI present mean scores and standard deviations for 11- to 12-yr-old girls and boys separately by sex and by school. Appendix IV shows that 11-yr-old girls and boys still in the primary school show higher *N* scores than the 11-yr-old grammar school children (significant at 0.05 level). The 12-yr-old girls and boys in the secondary modern school have higher *N* scores than the 12-yr-old grammar school children (significant at 0.001 level). This finding might probably help to understand the higher *N* values obtained by McAllister and Marshall (1969). These authors used only secondary modern school children, not a mixed school, as did Furneaux and Gibson (1966). It seems more likely therefore that McAllister and Marshall's results depict the normal tendency seen in the secondary modern school children as does the present study. Appendix V shows some differences in *E* scores of girls and boys of the same age belonging to different schools. However, these differences are not large enough, and fail to reach a significant level. The *L* scores in Appendix VI for children in the primary school are higher than the *L* scores for the children of the same age in the grammar school (significant at 0.01 level). There is, however, no significant difference in *L* scores between the children in the secondary modern school and the grammar school.

The results of the analysis of the four clinical groups for 8-12-yr-old children is presented in Table 3, and Table 4 shows the results for 13-15-yr-old children.

TABLE 3. SCORES OF 91 CLINIC CHILDREN, BOYS AND GIRLS BETWEEN 8 AND 12 YEARS OF AGE ON THE TWO SCALES OF THE LOKARE'S MODIFIED JUNIOR MAUDSLEY PERSONALITY INVENTORY

	Neuroticism		Extraversion		No.
	Mean	SD	Mean	SD	
Group A	11.33	2.94	8.95	2.35	36
Group B	11.33	2.57	13.45	1.52	24
Group C	6.62	1.03	9.62	1.98	21
Group D	4.50	2.37	13.90	1.58	10

TABLE 4.* SCORES OF 58 CLINIC CHILDREN, BOYS AND GIRLS BETWEEN 13 AND 15 YEARS OF AGE ON THE TWO SCALES OF THE LOKARE'S MODIFIED JUNIOR MAUDSLEY PERSONALITY INVENTORY

	Neuroticism		Extraversion		No.
	Mean	SD	Mean	SD	
Group A	12.83	3.55	6.22	2.74	18
Group B	11.29	1.75	13.43	1.98	7
Group C	7.11	1.65	9.44	3.16	9
Group D	4.75	1.45	12.63	2.16	24

*Reproduced in part from the author's own paper presented at the 6th International Congress of Child Psychiatry, 1966, Edinburgh, Scotland.

Clinical Groups *A* and *B* are similar as they are both high on neuroticism. Both the Groups *C* and *D* differ significantly from Groups *A* and *B* as they fall into the stable end of the *N* scale, Group *D* being at very much the lower end of the scale. The *E* scale differentiates highly significantly between Groups *A* and *B*, the former consists of highly introverted subjects, while the latter is made up of extraverts. Subjects of both Groups *A* and *C* are introverted, but the groups are highly significantly differentiated by the position on the *N* scale, the former being slightly neurotic while the latter occupies a position within the stable range. In addition Group *A* is more introverted than Group *C*. Groups *B* and *D* are both made up of extraverts, though the former group has a slightly higher mean score on *E*. They are however very significantly differentiated by their position on the *N* scale, the former being highly neurotic, while the latter occupies a position on the stable end of the scale. In other words the four diagnostic Groups *A*, *B*, *C* and *D* can be described in terms of their place on the two dimensions *E* and *N*.

DISCUSSION

The results of the present study are substantially in agreement with those obtained by the author in an earlier study of the LMJMPI. The overall norms for *N*, *E* and *L* obtained for 8-12-yr-old children in the present study (Appendix VII) are not very significantly different from those obtained for 13-15-yr-old children in an earlier study. The split half reliability and the test-re-test reliability for the 8-12-yr-old children show high correlations, and compare very favourably to those obtained for the 13-15-yr-old children (Table 2). In general terms these results are also similar in many ways to the results obtained by Furneaux and Gibson (1961 and 1966), and in many ways those obtained by Eysenck (1965) with the Junior Eysenck Personality Inventory. Differences do occur, and these may suggest some advantages of the LMJMPI. For example, girls and boys do not show significant difference in their *L* scores, and the small negative correlation observed between *L* and *N* scales is not as high as that obtained by Gibson (1964) and Eysenck (1965).

Analysis of the data of the clinical group gives results very similar to those obtained in the previous study (1966) with the older children. The four diagnostic Groups *A*, *B*, *C* and *D* are distinguishable in terms of personality characteristics, and can be adequately described in terms of their place on the two dimensions Neuroticism and Extraversion as Neurotic-introvert (*NI*), Neurotic-extravert (*NE*), Stable-introvert (*SI*) and Stable-extravert (*SE*). This can be clearly visualized at a glance at Fig. 1 (see appendix VIII) which shows graphically the respective position of mean scores of the diagnostic Groups *A*, *B*, *C* and *D* and the normal subjects on the two scales of Neuroticism and Extraversion. The clinical diagnostic Groups *A*, *B*, *C* and *D* are clearly marked by the four quadrants, *NI*, *NE*, *SI* and *SE* respectively, while the normals occupy a sort of neutral and in between position between the four quadrants. Thus the clinical diagnostic group tested and rated with respect to extraversion or introversion are very significantly different from the standardization group for the normals. The clinical diagnostic group also differed from the normal group significantly in respect of neuroticism scores. These findings are substantially in agreement with those of the earlier study: though minor differences do occur, they are not so large nor so frequent as to detract from this conclusion.

The descriptive diagnosis of clinical subjects in the four Groups *A*, *B*, *C* and *D* is very revealing. Neurotics suffering from anxiety, depression, obsessions, phobias and so on are found in the Neurotic-introvert quadrant, while neurotics suffering from hysterical type of reactions, impulsive, and/or violent (psychopathic?) reactions are found in the Neurotic-extravert quadrant. Since the completion of the previous report on the 13-15-yr-old children some additional facts have come to the author's notice. Two of the children in that group (now in the 16-18-yr age range) who were then described in terms of psychopathic characteristics, though not actually labelled as such, have since shown a further marked behaviour pattern which is indistinguishable from that of the adult psychopath.

From their descriptions the diagnostic Groups *A* and *B* would be found in the "Melancholic" and "Choleric" quadrants, respectively, in the Galen-Kant-Wundt system of personality categorization (Eysenck, 1953). Others working in the adult field have found that neurotic patients, all of whom are high on measures of Neuroticism (emotionality) are distinguishable by their place on the extraversion-introversion scale, hysterics and psychopaths tending to be towards the extraverted end, and dysthymics towards the introverted end of the scale (Knapp, 1962). Groups *A* and *B* in this study fit in satisfactorily with this finding, but it is not so easy to account for Groups *C* and *D*, who are relatively low on neuroticism, and whose behaviour disorders appear to be of non-neurotic origin. The explanation seems to lie rather in drive theory (Furneaux, 1961); the extraverts, Group *D*, being more readily stimulated by external environment, are likely to build up a higher level of drive, and therefore to over-react. Introverts, with the same level of neuroticism, will not respond to each chance environmental impression and will therefore show only minimal responses and a sub-optimal level of drive. This also contributes to our understanding of the distinction between Groups *A* and *B*. The neurotic extraverts of Group *B* will react poorly because their drive level is so high as to exceed the Yerkes-Dodson Optimum (Yerkes and Dodson, 1908) for tasks of the relevant kind, and their mobility makes them respond to each new idea thus leading to maladaptive responses mainly directed towards the environment. In our analysis of the clinical sample, children who show hysterical, impulsive, and/or violent behaviour (psychopathic?) whose abnormality consists mainly of their inability to act in a socialized manner, to show guilt and to behave irresponsibly, are found to be strongly extraverted and neurotic. The neurotic introverts of Group *A* are unlikely to develop *supra-optimal* value of effective drive (Furneaux, 1961), but are likely to produce progressively increasing drive with increasing values of neuroticism. They are also liable to form conditioned responses quickly and strongly, and are likely to associate accidental, and/or irrelevant features of the situation with the strong fear and pain responses elicited, and thus develop conditioned responses which are irrelevant, maladaptive and "neurotic". This would suggest that the degree to which the process of conditioning takes effect depends largely upon the conditionability of the child; the extraverted child conditions poorly and in the long run turns out to be a less socialized being than an introverted child who conditions well (Eysenck, 1960). It would follow, therefore, that children suffering from neurotic disorders could be helped by a process of conditioning, extinction or desensitization. Following Mowrer's (1950) theory of the process of socialization which states that the conditioning

reaction becomes generalized until it embraces the entire field of behaviour, it would appear that the strength or weakness of the conditioning process in introverts and extraverts also plays a large part in explaining their everyday behaviour patterns.

Finally, the work with adults which has been widely reported (Eysenck, 1963) has shown that stimulant drugs increase conditioning, while the depressant drugs decrease conditioning. There is also evidence based on the work with adults (Eysenck, 1964a; Eysenck, 1964b; Eysenck and Rackman, 1965) that neuroticism and extraversion factors occurring together pre-determine individuals' reaction to certain types of stimuli with neurotic breakdown or in other ways. Though no large-scale published reports on experiments with children are available to confirm that similar results would be observed in children, it would be reasonable to assume that this would happen. It would therefore seem that the information gained regarding individual differences in personality by the use of the LMJMPI could be useful in the selection of the proper course of treatment.

SUMMARY

The results of administering the LMJMPI to 280 normal children and 91 clinic children of 8-12 yr of age are reported. The analysis gave rise to two dimensions of personality which can be identified as neuroticism and extraversion and are completely independent of each other. The findings also show the ability of the LMJMPI to distinguish the clinical group from normals, even when used on a young population of 8-12-yr-old children. This suggests that the LMJMPI retains its reliability and validity when used with the younger children, and shows a reliable degree of concordance with psychiatric classification.

Acknowledgement—My thanks are due to the authorities of St. James' Hospital and the Medical Staff of the Children's Department. I am also grateful to Miss Silver and Miss Kingerlee for their helpful criticism. My grateful thanks are also due to Mr. Furneaux who kindly allowed me to carry out modifications to his JMPI, which enabled me to produce the LMJMPI for clinical use. Finally, my thanks go to the Wessex Regional Hospital Board who gave a research grant to cover the expenses.

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APPENDIX I

Neuroticism Norms for 8- to 12-yr-old normal school children

Age	No.	Girls		No.	Boys		Girls + Boys		
		Mean	SD		Mean	SD	No.	Mean	SD
8	11	10.36	2.69	14	8.50	3.18	25	9.32	3.11
9	28	9.36	2.91	28	9.57	2.30	56	9.46	2.64
10	20	8.80	2.93	23	9.70	3.64	43	9.28	3.36
11	31	7.81	3.31	24	7.95	3.20	55	7.82	3.38
12	51	7.76	3.51	50	7.50	3.00	101	7.63	3.28

APPENDIX II

Extraversion Norms for 8- to 12-yr-old normal school children

Age	No.	Girls		No.	Boys		Girls + Boys		
		Mean	SD		Mean	SD	No.	Mean	SD
8	11	9.91	1.77	14	11.64	1.69	25	10.88	1.93
9	28	11.50	2.41	28	12.39	2.46	56	11.95	2.49
10	20	11.05	3.01	23	11.70	2.83	43	11.63	1.80
11	31	11.03	2.70	24	10.46	5.75	55	10.78	4.32
12	51	11.92	2.86	50	11.72	3.40	101	11.82	3.15

APPENDIX III

Lie Scale Norms for 8- to 12-yr-old normal school children

Age	No.	Girls		No.	Boys		Girls + Boys		
		Mean	SD		Mean	SD	No.	Mean	SD
8	11	3.09	1.00	14	3.00	1.07	25	3.04	1.04
9	28	2.07	1.28	28	1.89	1.40	56	1.98	1.34
10	20	2.10	1.51	23	2.65	1.71	43	2.40	1.64
11	31	2.00	1.29	24	1.96	1.67	55	1.98	1.47
12	51	1.46	1.49	50	1.52	1.18	101	1.48	1.36

APPENDIX IV

Neuroticism Norms for 11- and 12-yr-old normal school children separately for each type of school

Age	No.	Girls	SD	No.	Boys	SD	Girls + Boys		
		Mean			Mean		SD	No.	Mean
(a) <i>Primary School</i>									
11	10	9.9	3.01	9	8.56	2.7	19	9.26	2.96
(b) <i>Grammar School</i>									
11	21	6.80	2.98	15	7.40	3.40	36	7.10	3.36
12	24	6.40	3.38	21	6.76	2.10	45	6.58	2.79
(c) <i>Secondary Modern</i>									
12	27	8.92	3.33	29	8.03	3.42	56	8.47	3.42

APPENDIX V

Extraversion Norms for 11- and 12-yr-old normal school children separately for each type of school

Extraversion Norms for 11- and 12-yr-old normal school children									
Age	No.	Girls		No.	Boys		Girls + Boys		
		Mean	SD		Mean	SD	No.	Mean	SD
(a) <i>Primary school</i>									
11	10	11.60	0.54	9	9.89	3.38	19	10.79	2.54
(b) <i>Grammar School</i>									
11	21	10.70	3.39	15	10.80	6.77	36	10.75	5.05
12	24	11.20	2.90	21	12.14	3.03	45	11.65	2.90
(c) <i>Secondary Modern</i>									
12	27	12.50	2.97	29	11.4	3.66	56	11.95	3.29

APPENDIX VI

Lie Norms for 11- and 12-yr-old normal school children separately for each type of school

Lie Norms for 11- and 12-yr-old normal school children separately for each sex									
Age	No.	Girls		No.	Boys		Girls + Boys		
		Mean	SD		Mean	SD	No.	Mean	SD
(a) <i>Primary School</i>									
11	10	2.50	0.72	9	3.00	1.25	19	2.74	1.11
(b) <i>Grammar School</i>									
11	21	1.76	1.38	15	1.33	1.58	36	1.49	1.57
12	24	1.45	1.98	21	1.28	1.16	45	1.36	1.66
(c) <i>Secondary Modern</i>									
12	27	1.40	0.91	29	1.70	1.13	56	1.55	1.05

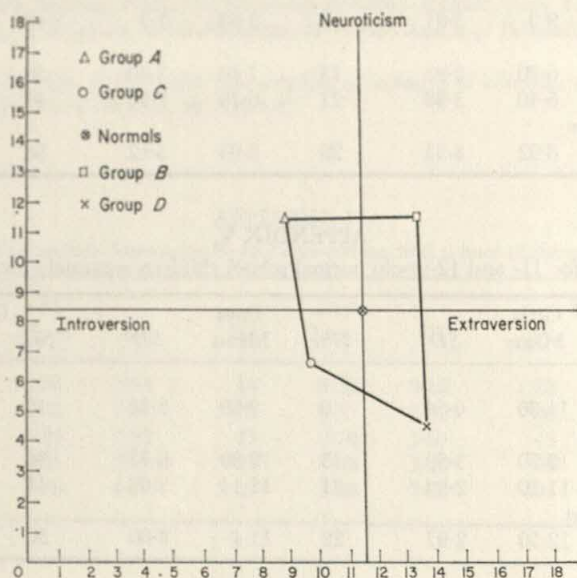
APPENDIX VII

All Schools, all ages from 8 to 12 yr combined Norms for Neuroticism, Extraversion and Lie for 280 children

	No.	Girls		No.	Boys		Girls + Boys		
		Mean	SD		Mean	SD	No.	Mean	SD
Neuroticism	141	8.44	3.32	139	8.44	3.32	280	8.44	3.28
Extraversion	141	11.36	2.77	139	11.63	3.60	280	11.49	3.22
Lie	141	1.91	1.45	139	2.03	1.47	280	1.96	1.47

APPENDIX VIII

Respective positions of mean scores of the diagnostic Groups *A*, *B*, *C* and *D* and the normal subjects on the two scales of Introversion-Extraversion and Neuroticism.



THE DEVELOPMENT OF SEXUAL DISCRIMINATION IN CHILDREN*

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INTRODUCTION

IN VIEW of the importance of infantile sexuality in Freudian theory, the paucity of systematic research in the area is somewhat surprising. There are few studies in the literature devoted to obtaining normative data on the child's concepts regarding sex. The purpose of the present study was to obtain data on one aspect of childhood sexuality—the development of the ability to discriminate between the sexes.

There are only two published studies of the development of sexual discrimination (Conn and Kanner, 1947; Katcher, 1955). In the former study a doll play interview was used to assess sexual discrimination. The *Ss* were 200 normal children aged 4–14 yr. The results indicated that it was not until ages 7–8 yr that significantly more than half (72 per cent) of the children discriminated the sexual differences between the sexes. In Katcher's study the *Ss* were 266 normal children aged 3–11 yr with the sampling being heaviest at the 3- and 4-yr levels. The procedure required *Ss* to look at pairs of pictures of adults and children and identify the man (woman, boy, girl). The stimuli were such that the sex of a given figure was determined by the hair, clothes, breasts, or genitalia only. When the discrimination had to be made on the basis of genitalia alone, it was only among the *Ss* 6 yr of age and older that there was evidence of discrimination beyond chance. Among the younger children (2 yr 11 months–4 yr 5 months) girls were more accurate than boys in discriminating children's genitalia. Children with opposite-sexed siblings were not more accurate than children without opposite-sexed siblings.

Neither Conn and Kanner nor Katcher dealt with the relative dominance of cues. It would seem important to determine not only the child's awareness of the genital difference, but also his knowledge that it is the essential difference which overrides other cues. In other words, at what point in development does the child realize that a figure with a penis is a boy even though the hair or clothes are clearly those of a girl? In the present study, discrimination of sexual differences was studied as a function of age and sex and an effort was made to evaluate relative dominance of cues.

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METHOD

Subjects

The *Ss* were 262 children 4-11 yr old. One hundred and eighty-two children were tested at a county hospital in Milwaukee while 80 were seen at a city hospital in Detroit. Fifty-two *Ss* were white boys, 77 were Negro boys, 56 were white girls and 77 were Negro girls. The number of *Ss* at each of the four age levels studies is presented on the bottom line of Table 1. The four age levels studied will henceforth be referred

TABLE 1. PERCENTAGE OF SUBJECTS DISCRIMINATING ON THE BASIS OF GENITALIA

	Age groups							
	5 yr 48-71 mths ($x = 58.2$)		7 yr 72-95 mths ($x = 82.7$)		9 yr 92-119 mths $x = 107.1$		11 yr 120-143 mths ($x = 132.9$)	
	<i>N</i>	% discrimi- nators	<i>N</i>	% discrimi- nators	<i>N</i>	% discrimi- nators	<i>N</i>	% discrimi- nators
White boys	10	10	12	58	13	85	17	94
White girls	13	23	14	43	14	71	15	93
Negro boys	18	22	17	35	23	83	19	95
Negro girls	19	32	17	71	20	75	21	86
Total boys	28	18	29	45	36	83	36	94
Total girls	32	28	31	58	34	74	36	89
Total	60	23	60	52	70	79	72	92

to by the approximate mean age for each group, i.e. 5, 7, 9 and 11 yr. All of the *Ss* were outpatients being seen for routine physical examination or for physical disorders with no associated emotional or intellectual difficulties. An effort was made to exclude children with psychiatric symptoms or with indications of mental retardation. The sample was almost entirely from the lower socio-economic class. Both hospitals are public institutions and, in cases where the father worked, the job was usually semi-skilled or un-skilled. Finally, all of the *Ss* had opposite-sexed siblings.*

Stimulus materials

The stimuli were drawings of white boys and girls attached to heavy cardboard backing. There were two types of stimuli; one type, the single-cue stimulus, depicted only the head, clothed body or nude body of a boy or girl. The nude body stimuli were painted, with the genitalia being visible. There were 18 single-cue stimuli—

*In the course of pilot work, data were obtained bearing on the hypothesis that children with opposite-sexed siblings are more able to discriminate sexual differences than children without opposite-sexed siblings. For children 4- and 5-yr-old there was suggestive evidence to confirm this hypothesis. The proportion of *Ss* with opposite-sexed siblings who were able to discriminate the genital difference was greater than the proportion without such sibs but the difference was not statistically significant (14 of 60 vs. 2 of 21, $p < .20$). This issue was not studied further because of the difficulty in obtaining an adequate number of children older than 5 yr of age without opposite-sexed siblings.

six hair (*H*) cards, six dress (*D*) cards, and six genital (*G*) cards. In each case, three cards showed boys and three showed girls. The second type of stimulus depicted inconsistent cues. For these stimuli the two cues represented were inconsistent in that one cue was appropriate for a boy while the other cue was appropriate for a girl. There were 24 inconsistent-cue cards, with each of the three possible inconsistencies being represented eight times. Thus, there were eight each of the *GH*, *GD* and *DH* cards. A *GH* card had the head of one sex over the nude body of the opposite sex. On the *GD* cards only the body was visible and the figure was nude from the waist down. The dress from the waist up was typical of one sex while the genitalia were those of the opposite sex. Within each of the three inconsistencies there was an equal number of each cue-sex combination, i.e. four of the *GH* cards had boy's genitalia and girl's hair while the remaining four had girl's genitalia and boy's hair.

Procedure

Most of the *Ss* were tested while they were waiting to be seen for physical examination. The nature of the research was first explained to the parent or other adult who accompanied the child. The research was presented to the parent as being designed to find out how children go about telling the difference between boys and girls. Of all the parents approached, there were only one or two instances of refusal to permit children to participate. After permission to test the child was obtained, the *E* accompanied the child to the room where the experimental procedure was conducted. All of the *Es* were white male graduate students or medical students. Before beginning the experimental procedure, an effort was made to establish rapport with the child and reduce any anxiety which might have been present as a result of the fact that the child was awaiting a physical examination. The child was then shown pictures of a car, boat, airplane and a pair of shoes and asked to identify each. At this point the child was shown a small cardboard statue of a doctor and instructed as follows:

This is a doctor. He's going to look at young children just as the doctors here examine you. I want you to make believe you are this doctor and you are going to look at these young children I have here. You are the doctor and I want you to tell me whether each of these pictures is a boy or a girl.

The 18 single-cue cards were then presented in a random order and the child was asked to indicate if each was a boy or a girl. The 24 inconsistent-cue cards were then presented immediately after the single-cue cards, with the *S* again being required to indicate the sex of the figure. The cards were presented in the same random order to all *Ss*.

RESULTS

The behavior of the *Ss* on the single-cue trials provides information on ability to discriminate between the sexes on the basis of hair alone, dress alone or genitalia alone. The inconsistent-cue trials provide data regarding knowledge that the genital cue is the essential difference.

Single-cue trials

The criterion by which an *S* was classified as being able to discriminate on the

basis of the hair, dress or genital difference was correct identification of at least five of the six stimuli in each case. For example, in order to be classified as being able to discriminate on the basis of hair, an *S* would have to correctly identify 5 of the 6 head stimuli.

When hair or dress was the only cue, almost all of the *Ss*, irrespective of age, were able to discriminate between the sexes. Only three *Ss*, all in the youngest age group, failed to satisfy the above-mentioned criterion of knowledge of hair and dress differences. The data for the genital cue are presented in Table 1. The bottom line of the Table indicates that the percentage of *Ss* aware of the genital difference increased with age. The Table also indicates that it is not until age nine that significantly more than half (79 per cent) of the *Ss* were aware of this difference. Statistical analysis of the differences among the four percentages revealed that for the entire sample there is a significant increase in knowledge of the genital difference at each of the age levels studied.*

The effects of sex and race were first evaluated by comparing the percentage of *Ss* aware of the genital difference in the four sex-race subgroups within each age level. The only significant difference found was at the 7-yr level. At this age, a significantly greater percentage of Negro girls were aware of the genital difference than were Negro boys ($p < 0.05$). Another way to evaluate the effects of sex and race is to follow each of the four subgroups over the age range studied. For example, Table 1 indicates that at age five, 10 per cent of the white boys were aware of the genital difference; the percentages for ages 7, 9 and 11 were 58, 85 and 94, respectively. Statistical analysis reveals that for both white boys and Negro girls there is a significant increase in ability to discriminate on the basis of genitalia from ages 5-7 ($p < 0.05$ in both cases). In the case of white girls a significant increase occurs from ages 5-9 ($p < 0.05$). Negro boys are similar to white girls in showing a significant increase from 5-9 ($p < 0.01$) and not from 5-7. In addition, Negro boys manifest a significant increase in awareness of the genital difference from 7-9 and from 7-11 ($p < 0.01$ in both cases). Thus, it is evident that Negro girls and white boys show increases in the ability to discriminate on the basis of the genital cue earlier than do white girls and Negro boys. By 7 yr of age, slightly more than half of the white boys and considerably more than half of the Negro girls are able to make such a discrimination.

Inconsistent-cue trials

In view of the fact that the focus of interest in these trials is on the ability to recognize that the genital cue constitutes the essential difference, overriding hair and dress, the only trials to be considered will be those on which the genital cue was inconsistent with hair and dress, i.e. *GH* and *GD* trials. Also, the only data to be considered are responses of *Ss* who demonstrated an awareness of the genital difference during the single-cue trials. Knowledge that the genital cue is the essential cue was

*The statistic used in this and subsequent tests was a *z*-test of the difference between two independent proportions. Correction for discontinuity was used when the smaller *pN* was 5 or less (Edwards, 1964, pp. 53-54). For statistical tests of the effect of increasing age, one-tailed tests were used since accuracy was expected to increase with age. Otherwise, two-tailed tests were used since the direction of the effects of sex and race was not predicted.

determined in the following manner: there are 16 trials to be considered, 8 *GH* and 8 *GD*. It was assumed that if an *S* responded on the basis of genitalia at least six out of eight times in each case, he was aware that the genital cue constituted the basic difference between boys and girls. An additional requirement was that each six of eight correct had to consist of at least three of four genital responses for each of the two sex-cue combinations. In other words, the six genital responses for the *GD* trials had to consist of three genital responses when the stimulus depicted boy's genitalia and girl's dress and three when the stimulus consisted of girl's genitalia and boy's dress.

Table 2 shows the number and percentage of *Ss* in the age groups 7, 9 and 11

TABLE 2. NUMBER AND PERCENTAGE OF *Ss* RESPONDING ON THE BASIS OF GENITAL DOMINANCE

Age groups					
7 yr		9 yr		11 yr	
<i>N</i>	%	<i>N</i>	%	<i>N</i>	
5	16	13	24	40	61

*The denominator in each case is the number of *Ss* discriminating on the basis of genitalia. For example, of the 31 7-yr-old *Ss* who discriminated on the basis of genitalia five or 16 per cent recognized that the genital cue was dominant.

who manifested dominance of the genital cue. Data for 5-yr-olds are not presented since there were only 14 children in this age group who discriminated on the basis of the genital difference on the single-cue trials. Table 2 shows that 16, 24 and 61 per cent of the subjects at the three age levels knew that the genital cue constituted the essential difference between the sexes. Statistical comparison of these percentages reveals that the significant increase occurs between ages 9 and 11 ($p < 0.001$). The effects of sex and race on knowledge of genital dominance are difficult to evaluate because of the small *Ns* involved. For example, among 7-yr-olds the proportions of *Ss* in the four sex-race subgroups who responded in terms of genital dominance were as follows: white boys, 1 of 7; white girls, 1 of 6; Negro boys, 2 of 6; Negro girls, 1 of 12. The *Ns* for the 9- and 11-yr-olds are somewhat higher but not overly substantial. There is some suggestive evidence that Negro girls acquire knowledge that the genital difference is dominant earlier than Negro boys and white children. Among the 9-yr-old *Ss*, 53 per cent of Negro girls (8 of 15) were aware of the dominance of the genital cue. The results for the remaining subgroups were: white boys 18 per cent, white girls 20 per cent and Negro boys, 5 per cent.

DISCUSSION

The results of the current study indicate that approximately half of a group of children with a mean age of about 7 yr were able to discriminate on the basis of the genital differences between the sexes. In a group with a mean age of 9 yr, significantly

more than half of the Ss manifested such discrimination. However, it was only in the 11-yr-old group that more than half of the Ss appeared to be aware that the genital difference is the *dominant* characteristic differentiating boys from girls. Regarding the effects of sex and race, the data as a whole suggest that Negro girls acquire knowledge about male-female genital differences somewhat earlier than white girls and white and Negro boys.

Comparison of the current data with the results of the study by Conn and Kanner (1947) reveals similar findings. The close correspondence between the two sets of data can be seen from a comparison of the findings at the point in development at which more than half of the children manifest awareness of the genital difference. It will be recalled that for Conn and Kanner's (1947) sample, all but a few of whom were white, the group aged 7-8 was the first group to show significantly greater than 50 per cent awareness of the genital difference. The incidence of knowledge in this group was 72 per cent. If the current data are re-grouped it is found that 73 per cent of the 7- and 8-yr-old white children were aware of the genital difference. Comparison of the current results with Katcher's (1955) data reveals some discrepancy. In Katcher's study 71 per cent of the 6-yr-olds made no errors on stimuli depicting genital differences. Thus, there is some evidence of earlier knowledge of the genital difference in Katcher's study. However, there was one aspect of Katcher's procedure which might have led to a higher incidence of correct identification than was obtained in the current research. In Katcher's study, the fact that male and female stimuli were presented in pairs might have called attention to differences and thereby increased accuracy. In other words, presenting drawings of a nude boy and a nude girl simultaneously may be an easier task than presenting the same stimuli singly because of the greater opportunity for comparison and contrast in the former procedure.

The data suggestive of earlier sensitivity to genital differences in Negro girls deserve some discussion even though some of the findings are based on very small *Ns*. One explanation is the possibility that the Negro girls in the current sample came from families with more opposite-sexed siblings or that they were more likely to have an opposite-sexed sibling close to them in age. Analyses of the data designed to evaluate this hypothesis tended to be non-confirmatory. There was no evidence that the Negro girls did, in fact, come from families in which they had more opposite-sexed siblings. Also, there was no indication that they came from families in which their closest opposite-sexed sibling was closer in age to them than was the case for the other three groups. Also, there was little or no correlation between an S's accuracy, on the one hand, and number of opposite-sexed siblings or closeness in age to the nearest opposite-sexed sibling. Another hypothesis is that certain realistic aspects of the home environment of Negro girls might facilitate awareness of anatomical sex differences. It is possible that the Negro girl is more likely to be required to care for her siblings because her mother works and is hence unable to perform such duties herself. As a result of bathing and dressing her siblings the Negro girl may acquire more knowledge regarding male-female differences. Unfortunately, data on the occupational status of the mothers of the Ss in the current study were not obtained.

Finally, even though the aim of the current investigation was to obtain normative data, the findings could be viewed as being relevant to Freudian theory. Since Freud

emphasizes the importance of penis envy in girls in determining the Oedipus complex, sex role identification, and adult character traits (Freud, 1925), one might predict greater concern with genital differences among girls as compared to boys. While the data for 5-yr-olds presented in Table 1 are in the predicted direction (28 per cent of the girls discriminate on the basis of genitalia vs. 18 per cent of the boys), the difference is not statistically significant. Analysis of the data on genital dominance also failed to provide support for Freudian theory.

SUMMARY

Developmental data were obtained on the ability to discriminate between the sexes on the basis of dress, hair and genitalia. The focus of interest was on developmental changes in ability to discriminate on the basis of genitalia and in knowledge that the genital cue constitutes the critical characteristic. It was found that about half of a group of 7-yr-old children were able to discriminate on the basis of the genital cue while significantly more than half of the 9-yr-olds manifested such discrimination. However, it was only in the 11-yr-old group that more than half of the Ss appeared to be aware that the genital cue is the *dominant* characteristic differentiating boys from girls.

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A NOTE ON THE EFFECTS OF GROUP AND INDIVIDUAL CONTINGENCIES UPON DEVIANT CLASSROOM BEHAVIOR

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INTRODUCTION

ALTHOUGH there have been a number of investigations of the effects of training teachers, parents and other adults to modify deviant child behaviors on both individual and group levels (Gelfand and Hartmann, 1968; Ullmann and Krasner, 1965), there are relatively few reports of the systematic use of group contingencies to modify the behavior of only one deviant child in a group (Patterson *et al.*, 1965; Straughan *et al.*, 1965). Only one previous study appears to have used systematic group contingencies in dealing with the disruptive behavior of a child of normal intelligence (Carlson *et al.*, 1968). The following case study describes the use of combined individual and group contingencies to modify the classroom behavior of such a child.

CASE REPORT AND PROCEDURES

Mike, a 6-yr-old first-grade pupil, was referred to the consulting psychologists at a well-child clinic through a public health nurse who had visited Mike's school. The psychological consulting service at the well-child clinic serves a large number of schools and other child facilities and it is not possible to devote an extended period of time to one case or facility. Any treatment program prescribed by necessity relies heavily upon the use of significant others in the child's life with only minimal supervision from the consulting professional.

At the time of referral, Mike's teacher, Mrs. S., had reported to the nurse that for a 4-month period, from the beginning of the school year in September, Mike had totally disrupted her classroom procedures. Besides throwing numerous tantrums during which he would lie on the floor kicking and screaming, Mike was constantly out of his seat, talking to and poking the other 25 children in the school room. A number of parents had complained to Mrs. S. and the school board that Mike's behavior was interfering with their children's learning, and the school board discussed the possibility of removing Mike from the school system.

Mike was observed in the classroom for a 2-hr period by one of the consulting psychologists. Mrs. S. was then interviewed. According to Mrs. S., who taught Kindergarten and first and second grades in the 2-room schoolhouse, Mike had not been a major behavioral problem in her Kindergarten class. When the problem behavior started at the beginning of the next school year, she had been very surprised and had had several meetings with Mike's parents to discuss the problem behavior. Apparently Mike had little contact with either of his parents or any adults or peers outside the school setting. Mike's father held two jobs, one as a meat-cutter and another as a gas station attendant, and his mother also worked during those hours that Mike was at home. A grandfather frequently "baby-sat" with Mike and the other sibling, a 2-yr-old sister. When Mrs. S. informed the parents about Mike's deviant classroom behavior, they stated that he had never been a problem at home and that if he was misbehaving at school, the school authorities should resort to the same measures that

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they used at home—a yardstick. Mike's parents apparently made it clear to Mrs. S. that the problem was not theirs, but the school's. Therefore, the parents felt that there was no need for them to become involved or to modify their behavior towards Mike. At the conclusion of the consultant's interview with Mrs. S., she was asked to keep a daily, written record of Mike's tantrum behavior throughout the day and was told that she would be contacted in 2 weeks.

During the second visit to the school, 2 weeks after the initial visit, Mike was interviewed and tested with the Stanford-Binet intelligence test (Terman and Merrill, 1960) to determine whether he was within normal I.Q. range and to establish a behavior modification program.

Rapport was easily gained with Mike and his answers to questions concerning his home life corroborated the information gained from Mrs. S., Mike's teacher—that most of his time outside of school was spent playing alone with little peer or adult social interaction. Mike also stated that he liked his teacher because he thought she was pretty. Mike fell within the normal range on the intelligence test. Immediately after this contact with Mike, a behavior modification program was described to Mrs. S. Because she reported that Mike had been averaging five to six tantrums a day with little day-to-day variation, treatment focused initially on this behavior. During the interview with Mike, it appeared that the positive attention of his classmates might be highly reinforcing to him. For this reason a combined group-individual program was designed. Mrs. S. was told that any time Mike displayed tantrum behavior he was to be removed from the classroom and put into an adjoining cloakroom until the tantrum ceased. On the other hand, if Mike went for a period of time without a tantrum, the entire class, including Mike was to receive a small amount of candy and verbal praise from Mrs. S. The designated periods, based upon Mrs. S.'s description of the frequency and timing of the tantrums, were set at four 1½-hr intervals throughout the day. Thus if Mike exhibited no tantrum behavior in a given day, the class was rewarded with candy at 10 and 12 a.m., and 1.30 and 3 p.m. Mrs. S. then described the program to the class. She was again requested to keep a written account of the tantrum behavior.

RESULTS

Mrs. S. was contacted by the psychologist 2 weeks after the second visit and she reported that the program had been totally ineffective. The class had received candy only once during the 2-week period and Mike was spending most of his time in the cloakroom. It was apparent that Mrs. S. had been sending Mike out of the room not only for tantrum behavior, but for any deviant behavior—getting out of his seat, talking, etc. Furthermore, Mrs. S. had provided Mike with a desk and chair in the cloakroom. Mrs. S. was given a detailed, written program which stressed that only tantrum behavior was to be punished and that Mike should stand, instead of sit, in the cloakroom. The group contingencies were to continue as previously planned.

Two weeks after the third visit, Mrs. S. reported to the psychologist that Mike's tantrum behavior had decreased substantially. He was still having one or two tantrums a day but the class was getting candy every day. Mrs. S. also reported that the class's behavior towards Mike had changed; he was loudly praised during periods of reinforcement and was now accepted into recess games. During the next three 2-week interval telephone contacts, Mrs. S. reported a further drop in tantrum frequency during the first 2-week interval and no tantrums at all over the last two 2-week intervals—a 1-month duration. The frequency of the tantrums over the treatment period is shown in Fig. 1. Mike's peer relationship had continued to improve and his other disruptive behaviors, such as walking around the room and talking to his classmates during the school time, had substantially decreased. Mrs. S. also reported that, for the first time since the beginning of the school term, Mike was doing his school work.

Throughout the rest of the school term, Mrs. S. did not contact the consulting

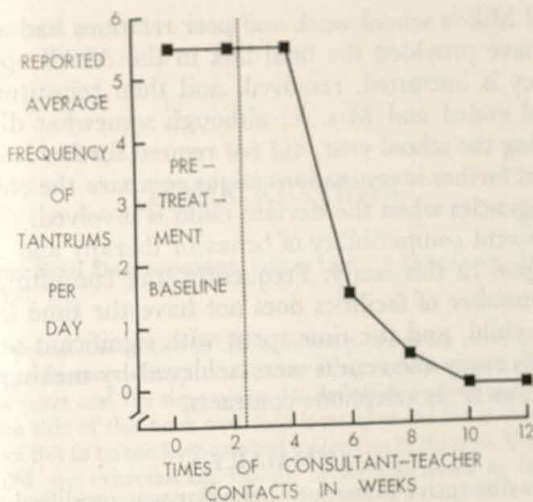


FIG. 1. Frequency of tantrum behavior over the treatment period.

psychologist and she was called at the conclusion of the school year approximately 2 months after the previous contact. At that time Mrs. S. reported that she had continued to send Mike out of the room when tantrum behavior occurred but that she had discontinued the group reinforcement procedures soon after the previous telephone contact. The tantrum behavior had remained at a low level—1 or 2 a week compared to the pre-treatment rate of 6 a day—but Mike's school work and peer relations had again deteriorated. In general, Mrs. S. felt that he had not disrupted the classroom but neither had he learned very much during the last month. There was no longer the threat that Mike would be removed from the school system. Mrs. S. did not request the further services of the psychologist, although they were offered, and apparently felt that repeating first grade would be sufficient to help Mike.

DISCUSSION

This case study illustrates several important points. First, in a situation where an individual child appears to be susceptible to peer influence, the therapy choice may be one where the child's peer group is reinforced dependent upon the performance of the individual deviant child. Few investigators have attempted to use peer pressures in a systematic fashion. The fact that peer pressures were involved in this case study may have been responsible for the spread of effect. Contrary to psychodynamic hypotheses concerning symptom substitution, by the time Mike's tantrums had decreased substantially his peer relationships had improved and he had begun to do his school work.

The final follow-up information further suggests that the tantrum and other disruptive behavior may have been controlled by the time-out procedure, removal from the classroom, while the spread of effect, improvement in school work and peer relationships, may have been controlled by the group contingencies. This tentative hypothesis would have been more adequately tested if the group contingencies had

been reinstated and Mike's school work and peer relations had again improved. In effect, this would have provided the final link in the ABAB operant paradigm in which a contingency is instituted, removed, and then reinstated. Unfortunately the school year had ended and Mrs. S., although somewhat disturbed by Mike's failure to learn during the school year, did not request further help from the consultants. It appears that further investigations might compare the efficacy of individual versus group contingencies when the deviant child is involved.

Finally, the apparent compatibility of behavior therapy and community mental health is focused upon in this study. Frequently, the consulting professional who deals with a large number of facilities does not have the time to become involved with the individual child, and the time spent with significant others in the child's life is limited. In this study the results were achieved by making three visits to the school and approximately six telephone contracts.

SUMMARY

A 6-yr-old male's disruptive classroom behavior was modified by a combined use of individual and group contingencies. When a tantrum occurred the child was put into an adjoining cloakroom. The deviant child, as well as the entire class, was rewarded with candy for periods of non-tantrum behavior. Although only tantrum behavior was focused upon, by the time the tantrums had decreased substantially, other deviant classroom behaviors had also decreased significantly and the deviant child's peer relationships and school work had improved.

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BOOK REVIEWS

Mechanisms of Motor Skill Development. Edited by K. J. CONNOLLY, Academic Press, London. 1970, pp. xvi + 393. £6.

MOTOR SKILL development has tended to take a second place to the study of sensory and perceptual processes. Nevertheless an enormous literature documenting various aspects of motor development has been built up over the years and the time is ripe for definitive reviews and constructive theorizing. On first considering the title of this book and then looking at the list of distinguished contributors, one is tempted to expect this to be the long-awaited major text in the area. Unfortunately I found that the book did not fulfil my expectations, mainly because it seems to lack the high degree of coordination that is so typical of a motor skill.

The book presents the Proceedings of a Study Group organized by the Centre for Advanced Study in Developmental Sciences in 1968. About a dozen papers and various edited discussion periods are included. My feeling was that the discussion sections could have been reduced a lot more, as the spontaneity of a Symposium setting does not come across in print. Individually the papers are good, although the length and style vary considerably. The range of topics covered is extremely wide and Connolly has no easy task in attempting to define common themes and separating the papers into different sections. To take an extreme example, Hinde's paper "The Development of Bird Song" is the only one in a section on Animal Studies. Another section with a single contribution is entitled Conditioning and Motor Control. This is the paper by Hefferline, Bruno and Davidowitz on "Feedback Control of Covert Behaviour" which includes an excellent review of the conditioning literature in this area. In the discussion that follows Bruner raises the question whether single motor unit work represents the study of a motor skill; if it does not, the paper remains a thorough attempt to examine possible underlying mechanisms.

There are three papers on aspects of development in infancy. Twitchell's paper on the role of reflex mechanisms in the development of prehension is fascinating but complicated. Earlier descriptions of grasping such as that by Halverson always seemed so straightforward. Bruner's title "The Growth and Structure of Skill" might well be saved for a separate book. His paper is a stimulating account of the development during infancy of such processes as taking possession of multiple objects, the complementary use of the hands and reaching behind a screen. White describes the effects of subtle environmental changes on aspects of motor development in groups of institutionalized infants. Manipulations of this sort are rarely possible in groups of children and the results are worthy of close inspection, even though the theoretical implications are limited.

Both Kay and Connolly are concerned with extending ideas generated in experimental psychology, in particular the concepts of channel capacity and information processing. Another important idea which is developed a little is the importance of anticipation in skilled performance, a concept which we owe to Poulton and Bartlett. Connolly reports the results of card-sorting experiments with which we owe to Poulton and Bartlett. Connolly reports the results of card-sorting experiments with children of different ages as subjects, the tasks being variations of earlier work on adults by Kay and Szafran. The results for unpractised children show surprising regularity considering the erratic estimates of rate of gain of information that turn up in undergraduate card-sorting experiments.

The grouping of papers by Lefford and Zinchenko in a section called "Cognitive Factors in Skill Development" seems arbitrary. Lefford has studied finger-thumb opposition and finger localization under a variety of visual and visual-kinaesthetic stimulation conditions. There are clear-cut trends in the results, but not necessarily sufficient evidence to justify a detailed discussion in terms of body schemata and a resurrection of the Gerstmann syndrome. Zinchenko's experiments employing stabilized retinal images to investigate perceptual representation provide a stimulating view of some current Russian research. Abercrombie's paper deals with some of the simpler aspects of the develop-

ment of drawing skills and Howard discusses adaption to discordance in the visual-motor system.

Accepting that this was intended as an interdisciplinary approach then the diversity of the papers is understandable. What is more surprising is the relative neglect of important areas. There is no attempt to evaluate techniques of measuring motor skill development beyond infancy. The Oseretsky Scale is mentioned in a single discussion session and quickly dismissed on grounds of lack of reliability. From several members of the group there is an implicit rejection of the importance of individual differences. Ingram and Prechtel present clinical viewpoints in the discussions but do not present papers. The development of handedness is not discussed, neither is language development. The extensive literature on motor development and reaction times in subnormals is also largely ignored.

In summary, the symposium was very profitable. The subject is complex and these papers are at the frontiers of knowledge. Collectively they make a valuable addition to the literature on motor skill development.

D. JONES

Stimulation in Early Infancy. Edited by A. AMBROSE, Academic Press, London, 1969, pp. xvi + 289, £4.

THIS BOOK is the Proceedings of the first of a series of study groups on "The Origins of Human Behaviour" organized by the Centre for Advanced Study in the Developmental Sciences. The group was intended to be multidisciplinary in character and in these circumstances it is not surprising that wide-ranging differences in approach emerged. While expecting these differences it is unfortunate that on several occasions we are confronted with a bimodal range of viewpoints. To put it simply there were those present whose main interest is in the effects of early stimulation on animal development and those whose main interest is in human development and mother-infant interaction. Presumably in setting up the group, it had been hoped that it might be possible to identify parallels in development in human and animal infancy. In the event, the consensus of opinion among those present seemed to be that work was going on at very different theoretical levels. The choice of topics accentuates the contrast between the human and animal areas, as the animal work reported is largely confined to rodent and bird studies whilst the investigation of non-human primates is relatively ignored.

Most of the animal work reported in two papers by Levine and one by Denenberg in the first section of the book has been well-documented elsewhere and we are presented with good reviews of their work and theoretical positions. Basically they are reporting the effects of early handling upon the development of laboratory rats, although a variety of other variables have also been studied. There is a multiplicity of findings both at the behavioural and neuro-endocrinal levels. The general conformity of results in this area is impressive despite occasional difficulties in the replication of specific observations. Ginsburg's comments on behavioural genetics are appropriately positioned after the rodent work making the first section more or less complete in itself.

The second section contains a more arbitrary collection of papers on the theme of mother-infant interaction. It begins with animal studies in Bateson's paper "Imprinting and the Development of Preferences". Bateson provides an overview of the mechanisms of imprinting in birds and a discussion of the concept of sensitive periods. The next paper by Ainsworth and Bell reports on a case-by-case survey of the feeding practices of 26 mother-infant pairs and how these practices relate to other aspects of development. One is immediately aware of the complexity of the variables being studied. The detailed observation of mother-infant interaction is also the basis of the paper by David and Appell. They have studied interaction and its possible impact on the child in five cases. Obviously any attempts to draw general conclusions from data of this sort are strictly limited.

The third and final section of the book is given more to aspects of cognitive development in the human infant and is less closely tied to stimulation problems. Bruner's paper "Processes of Growth in Infancy" is both theoretical and experimental and provides a preview of his extensive programme of research into cognitive development in infancy. There is no claim that this will provide an alter-

native model of cognitive development to that described by Piaget, but the reader is tempted to make this inference. The next paper by Papousek and Bernstein is less general and provides an extension of Papousek's work on conditioning of head-turning responses in young infants. There follows a short paper by Kagan who discusses the relation of such response variables as fixation and cardiac deceleration to social class. There is insufficient evidence to evaluate this study apart from an awareness of some of the methodological problems and the obvious link back to mother-infant interaction studies.

There is no attempt to provide a summary of the Proceedings and the final paper by Hamlyn, the chairman of the group, discusses a single problem area. This is the development of aggressive behaviour with specific reference to hormonal and socio-economic influences. Throughout the book there are extensive discussion reports following each paper together with general discussion periods at the end of each section. Ambrose has carried out a skilful job in editing these discussions and identifying problem areas. The discussions are always interesting and sometimes stimulating, but nevertheless I feel the book would not lose in value if the major part of the discussion was omitted.

In summary, this book will take its place alongside Foss's volumes *Determinants of Infant Behaviour* as a good collection of articles documenting selected aspects of early development.

D. JONES

Methods for Learning Disorders. PATRICIA I. MYERS and DONALD D. HAMMILL. Wiley, New York, 1969, pp. xii + 313. £3.75.

THE STUDY of specific learning difficulties in children has contributed to a change in focus of interest among Educational Psychologists and special educators. There is less concern about establishing the level of a child's performance and more interest in knowing about how he performs. Theoretical models of different aspects of intellectual function have been assimilated or formulated, and Myers and Hammill feel that these have provided a frame of reference within which the various manifestations of learning disability can be related.

The authors discuss learning disability primarily in the context of cognitive rather than of emotional disturbance in this book. They formulate a general model of their own and use it as a framework for discussing the assessment and treatment of learning disabilities. Their model is based on Osgood's and Wepman's models of language function and, correspondingly, their account of the assessment of non-linguistic disabilities is less comprehensive.

Seven of the eleven chapters are given over to summaries of major American "cognitive" approaches to the treatment of learning disabilities. These are grouped under the following types of systems: "perceptuo-motor", "multi-sensory", "language development", "phonic", "structured", "test related" and "neurological organization". The authors admit that this classification is somewhat arbitrary. The accounts of the systems are refreshingly objective, and the results of evaluation studies are summarized where these are available.

In a final chapter, the authors attempt to relate the objectives of the various systems to their own model. One feels that this does not work out quite as neatly as they suggest, but the exercise certainly helps to delineate the scope of the systems. What emerges very clearly, as the authors themselves point out, is the extent of our ignorance about the interaction between these cognitive functions and the tasks in which the children show disability.

The book makes a major contribution by attempting to provide a systematic account of the nature and treatment of specific learning disabilities. One may feel that the authors are a little optimistic about the level of theoretical sophistication achieved, but one is abundantly grateful to them for bringing together such a range of material. A glossary of common technical terms is included as an appendix. The book will thus be of interest and use both to those who are working in the field of learning disabilities and to those who are new to it.

K. WEDELL

Dimensions of Reading Difficulties. A. T. RAVENETTE. Pergamon Press, Oxford, 1969, pp. v-xiv + 102. £2.05 (hard), £1.50 (flexi-cover).

DR. RAVENETTE's book is the first in a new series entitled "Problems and Progress in Development", the aim of which is to help different professions to acquire a common language of inter-communication and to find a framework into which the various contributions could fit together. Each book in the series will deal with a topic "that in the past has been dealt with by a number of professions, each in its own way, and without knowledge of the contributions that other professions might be making", the selected topics falling under the headings of disorders of function, critical stages of development and special situations. The range covered is obviously going to be wide, judging by those included under the first category—disorders of function, which "refers to difficulties in the acquisition of skills and performance, such as speech, reading, bladder and bowel control, and also the various educational and occupational performances". In accordance with the aim of the series, discussion of the selected topic will take account of constitutional and organic factors, environmental and educational influences, and amongst the psychological processes, those within the individual as well as the interaction between the individual, his family and others in the wider environment of the child. This is a laudable goal, but if the books in the series are of the size and format of the first one, 97 pages of rather modest size, it may be rather difficult to achieve.

In his foreword to the book the editor draws attention to the differing approaches to reading as a good illustration of the kind of situation in which the series will prove of value, when he states that teachers, pediatricians, psychiatrists, psychologists and social workers all naturally seek an explanation within the general framework of their professional practice. "Each explanation and method of treatment is likely to be within a single dimension which ignores all other factors, physical or mental, in the child who lives and grows in his family and social setting." Reading, however, is a less happy example than may appear from this comment. Individual teachers are ready, at times perhaps too ready, to look for an explanation of progress (or lack of progress) in a field other than education itself, and studies on reading have explored a fairly wide range of associated conditions, physical, psychological, educational and social.

This is the standpoint of Dr. Ravenette, who treats the problem of reading difficulties from a number of different points of view—or dimensions, since, as he says, each dimension can be used to enlighten the problem, and variety of dimensions will enlighten the problem in a variety of ways. Apart therefore from a preliminary chapter on the function and purpose of reading, each chapter treats of a different dimension, the final one bringing them into one overall perspective.

The discussion is based upon the results of an enquiry which the author conducted amongst 22 head teachers in a London Borough. In this, the teachers were asked to give three causes of reading failure and three causes of reading success. The responses were classified into the categories used by Morris (1959) in her survey of reading attainment in the Kent schools—child centred, home and school centred respectively, thus making comparison possible between the two sets of results, though Morris asked teachers to rate these in order of importance and Ravenette points out that he did not. The frequencies of responses in the three categories were very similar, strikingly so in the case of child centred conditions. As to what makes a good reader, Ravenette found this to be related to the same factors, a result not always found in the rather few researches which have investigated success. Further information regarding these dimensions was elicited from the teachers by questioning and this material contributes to the author's discussion. In the chapter on conditions which are child-centred he takes up such topics as intelligence, attainment and the relation between these, basing some of the discussion on his own research, the development of language, perceptual efficiency, all treated rather briefly in the space of less than 20 pages. He then turns to sociological and family dimensions, although as he points out, it is difficult to separate the child from his family. Here he gives some interesting examples of family studies of poor readers. Following this he treats conditions in the school, staffing, materials and methods. He follows this discussion of dimensions with a fair and dispassionate chapter on dyslexia. Finally he returns to the child, what he thinks and feels about school, about the teacher and what he experiences in the home regarding school and learning, and what kind of measures he tries to take to deal with his own difficulties.

This is a sensible book and Dr. Ravenette knows what he is talking about. It suffers chiefly from

lack of space to develop any subject at any length and the references both in the text and at the end are rather few for the teacher who will almost certainly wish to go on reading about reading.

GERTRUDE KEIR

REFERENCE

MORRIS, J. M. (1959). *Reading in the Primary School*. Newnes, London.

Dreams, Images, and Fantasy: A Semantic Differential Casebook. C. SCOTT MOSS. University of Illinois Press, Urbana, Illinois, 1970, pp. xiv + 302. \$8.50.

"Black Rover, Come Over!: The Hypnosymbolic Treatment of a Phobia." C. SCOTT MOSS and PAULINE JAMES. University of Illinois Press, Urbana, Illinois, 1970, pp. x + 140. Paperback book only \$3.95, Book and audiotape \$12.50.

IN THE first of these books, the author argues that with the accelerating move towards community mental health programmes in the United States, there is an urgent need to replace the traditional forms of extensive individual psychotherapy with brief, focused and reality orientated forms of therapy. As a result of many years of practising hypnosis within a broad psycho-dynamic framework, the author describes his own approach which he labels "Hypnosymbolic Treatment".

The subtitle to the first book reflects the author's awareness of the need for all therapists to evaluate the effects of their intervention. For those whose therapy is aimed at insight rather than overt behaviour, evaluation has proved almost impossible. The advent of the Semantic Differential Technique opened up one avenue of evaluation. Three of the six chapters illustrating the use of the Semantic Differential are reprints of papers previously published, and many have been written jointly with other authors. This leads to some unevenness in presentation, and a lack of continuity in the book. However, the attempt to bring the introspective phenomena of dreams and fantasy under experimental analysis can only be welcomed.

The longest chapter in the Clinical Studies section of the first book is given over to 94 pages of the author's description of his treatment of a dog phobic. The second book was largely written by this same patient and contains her own contemporaneous accounts of treatment sessions, with the therapist's observations in parenthesis. These accounts make fascinating reading, and doubtless the audiotape of selected sessions would add to the fascination.

The main question raised by the detailed accounts of treatment sessions is, was the hypnosis either necessary or sufficient for the undoubted success of the treatment? How far can this form of treatment be interpreted as an example of systematic desensitization using enhanced imagery?

It is clear that in the sixth session, the patient was given the post-hypnotic suggestion that she would frequently experience a positive visual hallucination of the dog. She was told that she could control this image and could "allow the dog as close as desired or keep him as distant as fear dictated". This has all the appearances of a self-paced imaginal desensitization.

In four pages in the first book, Moss shows that he is aware of this parallel. Alas, in this brief section, his understanding of behaviour modification in general, and of systematic desensitization in particular, appears muddled. His claim that treatment of the phobia by desensitization would not have affected other aspects of the patient's life and relationships is only speculation. As for his claim that hypnosymbolic therapy is less boring for the therapist than behaviour therapy, this is strangely out of keeping with the original search for brief, effective methods of helping people in trouble. After all, leucotomy may be a more interesting form of treatment than E.C.T. or drugs, but does this alone justify its use?

Whilst it cannot be held that these studies attain the goal of evaluating changes during treatment, at least they aimed at that goal and achieved partial success. The detailed accounts of one treatment case allow the reader to form his own opinions of the successful elements in the overall treatment. This, in itself, is a rare opportunity.

W. YULE

Cognitive Studies, Vol. 1. Edited by JEROME HELLMUTH. Brunner/Mazel, New York, 1970, pp. x + 511. \$12.50.

ALTHOUGH this book is a bad example of the editor's craft it would nevertheless prove a most valuable addition to the shelves of a purchaser. Beyond the fact that all its chapters relate to some aspect of cognition, there is little evidence of planning either about their choice or their arrangement. But a high proportion of contributions happen to be very good of their kind.

One group consists of review articles. Among these one is particularly grateful to Jane Kessler for her comprehensive overview of theory and research on learning in the subnormal and its implications for the study of cognition in the normal. There is scholarship in selection, judgement and balance in criticism, and a fine intelligence in presentation and evaluation. Furth's two papers on thought in the deaf provide a complete breakdown of the current state of the evidence on the degree to which language impairment in the deaf entails impairment in thinking. Whiteman provides an excellent review of the development of psychological causality combined with an account of a stimulatingly fresh series of enquires linking elements of Piagetian and Freudian theory. By contrast, Manis' chapter on factors affecting attitude scaling is thin, Yarrow's statement on deprivation is far too sketchy to be a useful guide in this very complex field, and the personal reflections of Elkind and Kohnstamm (originally a discussion statement in a symposium) hardly merit publication. Arieti's paper on 'Cognition and inner reality' relies too heavily on a combination of jargon and reference to the author's other writings. Reitman's paper on current developments in computer simulation shows a similar tendency but nonetheless incorporates an acute analysis of the limitations of GPS together with a nice description of what he sees as the central problem for this line of research: how to simulate thinking behaviour in open-ended situations.

Gollin's clear analysis of developmental changes in learning stands on its own, despite its over-concentration on studies of reversal learning. He brings out sharply the limitations of mediation theory as well as cue-selection theory, stressing the essential part played by the availability of hypotheses. One is left with the problem of defining the nature of these hypotheses and accounting for their origin. I believe that this, in essence, is also Reitman's problem, though stated in different terms. It is perhaps the central issue in the field as a whole, and no blame attaches to Gollin for not offering what would be a major breakthrough.

Almost the sole example of editing is the juxtaposition of three papers by Zimiles, Goodnow and Ossler, all of which deal with cultural and sub-cultural variations in conceptual skills. Only the last is of the quality one expects in a special collection of the sort which this should be.

There is a group of three papers each of which describes a particular piece of research (characteristically scattered about the volume). All are worthwhile because of the originality and importance of these enquiries. Burton White has a carefully controlled study of the validity of Piaget's work on the integration of schemata in infancy, bringing out both the complexity of the facts and the effectiveness of an enrichment programme. Staats gives a provocative but nonetheless convincing account of his studies on the control of motivational variables in learning to read. Covington summarizes his research programme on training for effective thought in realistic situations.

Finally, the first chapter (by Church) and the penultimate (by Banta) describe new techniques and measures. Both are useful.

One topic which has been too often taken for granted is the comparative effectiveness of concrete rewards and knowledge of results in learning experiments. Kessler refers to a series of relevant studies and their findings. Remembering that I had seen this, unsure in which chapter, and wishing to refer back to it, I looked up 'reinforcement' in the index. 'Reinforcement' is there all right, but not this section, though it is headed 'The Reinforcer hierarchy'. I conclude that the very short index is very nearly useless.

In this basket of fruit, the good outweighs the bad. There is an information explosion, and hence there is a place for annual or biennial publications each covering a more or less well-defined field and including reviews and research articles that appear to be of outstanding importance. The former may be specially commissioned or they may not. The latter will nearly always be reproduced from journals. But there is no excuse for the inclusion of material which is not even up to journal standard, or for the failure to exercise editorial control over the product.

E. A. LUNZER

Group Therapy with Families of Sexually Acting-Out Girls. A. S. FRIEDMAN, J. C. SONNEN, J. P. BARR, I. BOSZORMENYI-NAGY, G. COHEN, R. SPECK, J. E. JUNGRIE, G. LINCOLN, G. SPARK and O. R. WEINER. Springer, New York, 1971, pp. x + 214. \$7.50.

IN AN earlier book, *Psychotherapy for the Whole Family*, the group comprising the "Philadelphia school" presented their findings during the intensive treatment, with conjoint family methods, of a series of families producing schizophrenic members. In the present volume, the team report on their conclusions regarding a similar type of approach to families producing daughters who act out sexually in such a way as to attract the attention of community agencies.

In their classic paper, Beels and Ferber ("Family Therapy: A View", *Family Process*, 8, 280 (1969)) divide family therapists into three main groups. In contrast to the "conductors" (Ackerman, Satir, etc.) who openly take charge of the family and impose their own value system, and the "system purists" (Haley, the late Don Jackson, etc.) who out-manipulate the family, the Philadelphia school are characterized "reactor-analysts", because of the way in which they allow themselves to be exposed to, and affected by, the family pathology. I find myself particularly interested in, and sympathetic to, their approach because of the concern and respect that they show not only to the families, but to each other (more than any other group, they tend to work in co-therapy pairs), and the relative absence of manipulation and other self-protective procedures.

After an excellent summary of the literature of female sexual delinquency, with particular regard to its connection with family dynamics, clear accounts are given of the conjoint family approach employed by the team, with many detailed case records and an annotated account of a marital dialogue. However, although the cases dealt with are of a particular type, the book as a whole seeks to illustrate a method of treatment which has a much more general application. There are chapters on problems involved in co-therapy; detailed accounts of the same family as seen by a trainee therapist and by the teaching therapist who took the lead in the interviews; several chapters setting out original findings regarding the advantages and difficulties involved in family therapy generally; and a good chapter on the often-neglected advantages of the therapeutic use of agencies mediating social control in families where the control mechanisms are defective.

The presentation has a refreshing directness and simplicity, and the authors come across as a warm, human and likeable team. The book will be of interest to all those involved in conjoint family therapy, as well as those specifically concerned with problems of sexual delinquency. The main faults—an inevitable unevenness in the quality of the different contributions, and a general limitation in the capacity to perceive group interaction (a fault common to all the American schools, where previous experience of conventional "small-groups" psychotherapy appears to be limited)—are minor compared with the lively and thought-provoking contributions.

A. C. R. SKYNNER

The Bases of Social Behaviour. An Approach in Terms of Order and Value. PETER KELVIN. Holt, Rhinehart & Winston, London, 1970, pp. xiv + 334. £1.75 Limp.

THIS is a very good book which makes an excellent introduction to social psychology. It is refreshingly different from the usual textbook in that it does not set out to be an exhaustive survey of the facts and findings on the subject. Rather it provides a critical, argumentative, and provocative examination of basic concepts, together with a theoretical linking of these key concepts with particular emphasis on system and order, on values and attitudes and on the development of social behaviour. Most of all, it is a book which makes the reader think and stimulates him to wider reading. The beginning is a bit slow as a result of the attempt to carefully define terms before proceeding with the argument. However the reader who perseveres is well rewarded.

Kelvin considers that as a prerequisite to man operating in a social environment he needs both to perceive and to establish order. The order is a consequence of the constraints and regulation of the physical environment and also a function of the system imposed as a result of a set of values. The

book provides a useful analysis of the behavioural, cognitive and affective components of attitudes and the inter-relationships between them. Attitude change is discussed in terms of the effects of prior beliefs, one-and-two sided arguments, mild and extreme statements, the status of the person providing the message, the consistency of attitudes, norms and conformity, stereotypes and labelling. The importance of group identification in influencing attitudes is considered. In this connection it is relevant that schools can have a most powerful and persistent effect on attitudes (as shown, for example, by Newcomb's study of girls from a "conservative" background at a "liberal" college). Kelvin notes the influence of assuming a role on the development of attitudes; thus, one study showed that men become more favourable in their attitude to business management when they are made foremen. This mechanism has obvious implications for the giving of responsibility and control to young people. Furthermore, it seems that the act of assuming a stance tends to lead to the acceptance of its associated values—as men behave so their attitudes fall in line. This might be applied to the pessimistic view that racial intolerance cannot be regulated without a change in the basic attitudes. Perhaps if behaviour is changed, the attitudes themselves may follow suit.

The effects of role conflict are considered and the differences between institutional and personal power and between power and status are defined. Various types of leader are differentiated and factors leading to leadership and the resulting effects on group behaviour are described. Groups are discussed with respect to their cohesiveness, physical properties, predictability and social efficiency, and Kelvin comments on how little we still know about crowd behaviour. Finally, the concepts of a social skill, identification and the consistency of adult models are brought in in a discourse on personal interaction and the development of socialization.

This is an unusual book with few "answers", nothing on methodology, very little on some basic psychological processes (such as motivation and learning) and with scarcely any attempt to consider applications to social problems. It is not an account of research but arguments are closely tied to research findings. What it does not include is readily covered by the annotated list of readings given at the end of each chapter. What it does provide is a self-critical, challenging and thought-provoking account of some facets of social psychology, which aims to get the reader thinking independently on the subject. This is a book which can be unreservedly recommended as an introduction to the psychology of social behaviour, a topic of concern to anyone interested in child development or child psychiatry.

MICHAEL RUTTER

Social and Cultural Factors in Mental Health and Mental Illness. Edited by KURT WOLFF. Charles C. Thomas, Springfield, Illinois, 1971, pp. ix + 110. No price stated.

THIS BOOK is a record of the contributions to a conference held at the Coatesville Veterans' Administration Hospital in Pennsylvania. The conference shared the same title as the book, which is claimed to be "unique in its totality and originality". Unfortunately this claim is not substantiated as the contributions are too short to deal with the important issues raised at more than a Sunday supplement level. The exception is a chapter on the primary prevention of mental illness, in which the practical difficulties in deciding what action is feasible and what may be effective are discussed. The other articles range from an attempt to define psychopathy, through an analysis of the present position and needs of American youth, to the problems of the American negro. With the exception of the last chapter, which is couched in ponderous Americanese, the book reproduces the chatty style of the original lectures and provides a pleasant way of passing a wet afternoon.

J. P. LEFF

Residential Care for the Mentally Retarded. Edited by ELSPETH STEPHEN. Pergamon Press, Oxford, 1970, pp. x + 45. 75p.

TOPICALITY is often relevant to symposia and scientific meetings, and delay in making the printed record available can lessen the value of a publication. This symposium took place in 1968, the year before Ely brought the problems of the subnormality hospitals into the forefront of public attention. Since then a new government has published "Better Services for the Mentally Handicapped" and this in turn has provided a spur to further inter-disciplinary discussion.

However, this first symposium from the Institute for Research into Mental Retardation, a London meeting chaired by Kirman, proves worth waiting for, since it brings together important papers by Kushlick and Stephen with a foreword by Clarke and a preface by Tizard. Cross-references abound, Stephen's study having originated in Tizard's pioneering "Brooklands Experiment", and Kushlick describing work by Tizard's team employing a new scale devised to compare "institution oriented" with "child oriented" patterns of child care. Clear description of the elements in a familiar but complex situation is a pre-requisite before re-evaluation of current procedures and clarification of new aims can follow. It is a salutary exercise for anyone in child-care work to check at each and every point whether or not routines being practised are "child oriented" in King and Raynes' terms.

Kushlick's Wessex studies provide valuable data on the range and degrees of incapacity in a regional population of severely subnormal children. Theory has led to practice in the provision of hostel-type accommodation by the Wessex Regional Hospital Board, anticipating a move away from large, traditional subnormality hospitals towards "substitute home" patterns of care.

Stephen and Robertson adapted a hospital ward's regime on a residential nursery pattern, with family groups and emphasis on individual approach. The imbeciles (i.e. higher grade S.S.Ns) benefited most, the most profoundly handicapped scarcely at all; a necessary reminder that there are children for whom environmental manipulation, and heavy financial investment, may produce marginal or negligible improvement.

The papers have useful references, and a well-selected bibliography ensures that people who might rely on this booklet for an introduction to British thinking on the topic will be put straight in touch with some of the most relevant work up to 1968. Layout, printing and presentation are exemplary, and one looks forward to the early appearance of further published symposia from the same source.

P. GRAHAME WOOLF

REFERENCE

Better Services for the Mentally Handicapped. Department of Health and Social Security Welsh Office. Cmnd. 4683, H.M.S.O. (1971).

Basic Child Psychiatry. PHILIP BARKER. Staples Press, London, 1971, pp. xv + 236. £1.50.

ONE COULD say that Child Psychiatry has come of age with the appearance of this good, comprehensive text-book. It tells the student, under-graduate or post-graduate, all he needs to know to give a satisfactory answer to any question on child psychiatry likely to be asked in an examination. It should also be valuable to the junior psychiatrist taking his first plunge into child psychiatry.

Chapter 3, on the psychiatric assessment of children, is particularly good and should be of the greatest help. The references at the end of each chapter, the select list at the end and the glossary are also just what the beginner needs.

The book is very well written and a pleasure to read. At times there may be rather too much compression but this, if it is a fault, is the only one apart from a few typographical errors I can find.

Professor Trethowan in his foreword has some profound things to say about the differences between child psychiatry and general psychiatry and, as might be expected, goes to the heart of the matter.

This is a much-needed book.

PORTIA HOLMAN

Medical Examination Review Book. Vol. 23. Child Psychiatry. J. C. DUFFY. Medical Examination Publishing Co., New York, 1971, pp. 167. \$10.00.

THIS loose-leaved book consists mainly of 700 multiple-choice questions—and their answers. The preface states that it is designed to enable the reader to “detect areas of weakness” in the subject, and so, presumably, to inspire him to further study. Its use in relation to “various types of National Board, State Board and School examinations” is also mentioned.

While in the U.S.A. the latter consideration probably makes the book useful, its value to readers in other countries is less easy to define. The questions have been obtained from a selection of 20 books on child psychiatry and related topics, including mental subnormality. Some of the statements on which they are based are questionable. The answers to others might vary in different countries or settings, e.g. question 23, “Which of the following is the major source of referral to child psychiatry?”. But each answer is supported by reference to one of the books listed at the end.

Despite these reservations, the reviewer was fascinated by the book. It was comforting to find that one could correctly guess what Rabinovich feels is the best treatment for the latency-aged psychopath (question 681), and also what “the post-war decade saw ferment and growth in” (question 498). At the same time it can now be revealed that there are several areas of weakness in the undersigned’s knowledge. No doubt knowing this will be good for him. Similar benefit may also accrue to others who attempt to answer these 700 questions. Perhaps, as the Royal College of Psychiatrists develops and refines its examination for Membership, there will also come to be a more practical need for a book such as this in Britain too, though whether this is to be desired may be open to question.

PHILIP BARKER

An Introduction to Mental Retardation. ROBERT M. SMITH. McGraw-Hill Book Company, New York, 1971. pp. vi + 257. No price stated.

THIS BOOK is written as an introduction to the field of mental retardation for the following groups—students who may be interested in the mentally retarded professionally, for people managing the retarded and, finally, for parents for whom a large number of the sections have been specifically written. It is written for a different purpose for each group. For professional students it is particularly useful as providing a complete bibliography. For people managing the retarded it is useful as giving them the findings of modern research, whereas the sections for parents are based on a survey of parents’ questions. As the book is addressed to these varied groups, it is written at a non-technical level. It is difficult to write in this way, but the author achieves his object well and writes clearly.

The book consists of an introductory chapter giving an overview of the field of mental retardation, in terms of ages. Professor Smith begins with a chapter at a time before and soon after birth and ends with one on the retarded adult. The final sections consists of two appendices—one on research issues, and a second on a summary of recommendations for planning, developing and co-ordinating programmes for the mentally retarded. A particularly useful feature is a list of recommended readings at the end of each chapter.

It is difficult for one author to cover all aspects of mental retardation in one book. Professor Smith is an educationist and the main emphasis of this book is on the education of the mentally retarded. Some form of behaviour shaping is advocated. The content of the method is given in scales of skills appropriate to each succeeding age. There are several themes which recur at each of the five ages of the mentally retarded. These are advice to parents, critical discussion of institutional life and the content of educational programmes.

In a book of this scope there are bound to be omissions, e.g. English work is not fully covered and the management of the profoundly retarded is not sufficiently considered. However, this book is a valiant effort to present an introduction to mental retardation for the people to whom it is addressed. It is a picture of the American scene, but much is relevant to the care of the mentally retarded in this country.

ELSPETH STEPHEN

The Chronically Ill Child and His Family. Edited by MATHEW DE BUSKEY and ROBERT H. DOMBRO, Charles C. Thomas, Springfield, Illinois, U.S.A., 1970. pp. xvi + 203. No price stated.

THIS BOOK is about the wide-ranging needs of children afflicted with handicapping, mutilating and mortal disease processes. The modern concept of the "new paediatrics" to provide total care through the means of active collaboration of many disciplines is explored. The doctor is encouraged to share judiciously the various aspects of care with paramedical and auxiliary personnel whilst laying upon him the duty of harmonious integration (co-ordination?) of their various functions. A series of experts examine the particular needs of their own separate fields. Community involvement and care of the child in hospital are both discussed. The frontispiece by Aaron Sepher of the large scale, child-accepting, beneficent figure of Christ opens the door to the succeeding chapters contributed by no less than 25 experts ranging from a fourth-year medical student through a child health nurse, medical social workers, a physiotherapist, teachers and an administrator, to numerous professors of paediatrics, paediatric surgery and child psychiatry. One would have liked to have seen the titles "Paediatrics and Child Health" and "Child and Family Psychiatry" more in evidence in a book of this kind, and perhaps more recognition of child clinical and educational psychologists. The message of this book is well founded on the First Aphorism of Hippocrates quoted by the editor as follows: "It is necessary for the physician not only to provide the needed treatment, but to provide for the patient himself and for those beside him and to provide for his outside affairs."

To give an insight into the medical content of this book, the following diseases are discussed in their own chapters by experts in the relevant fields, viz. Cystic Fibrosis of the Pancreas, Cardiac Handicap, Leukaemia, the Nephrotic Syndrome, the Chronic Speech and Hearing Problems, Cerebral Palsy, the Burned Child, the Atopic Child, the Psychologically Ill Child. Mentally Handicapped and Socially Handicapped children and their problems and management tend to be rather left out, but perhaps in an American book of this nature this is more understandable (even if equally regrettable) than in a book written in Britain where the resources of the National Health Service, meagre though they are, are more equitably spread. The ideas and methods expressed in this book from the Johns Hopkins University School of Medicine still need to be applied much more widely in this country and throughout the world, and it is recommended that this book should be read by all disciplines concerned with handicapped and chronically ill children. This book has much to offer, particularly to students and younger doctors, but workers in this field of any degree of seniority could well be reminded of the importance of caring and careful practice in this field.

ROBERT WIGGLESWORTH

Introduction to Modern Behaviorism. H. RACHLIN. W. H. Freeman, San Francisco, 1970, pp. ix + 208. £1.20.

IN 1913 J. B. Watson wrote the first definitive text on behaviorism entitled, *Psychology as the Behaviorist Views It*. Nearly 60 years later the author of the present volume, who obtained his doctorate in Skinner's department at Harvard, informs us, like Watson, that the main purpose of his book is "simply to give the reader an idea of what sort of things psychologists who call themselves behaviorists do and why they do them". It is obvious from the format, tone and content of the book that the author had his mind on the American college freshman when he wrote it.

Rachlin adopts the traditional approach by introducing his account of behaviorism with a discussion of historical and philosophical developments up to the twentieth century, after which the main body of the book is taken up by description and close examination of the two main kinds of conditioning and associated phenomena. At the end there is a brief section on how experimental techniques previously described have been used in the clinical situation. Useful annotated bibliographies are given at the end of each chapter and there is a handy glossary of over 60 terms introduced in the text.

As an introduction to the study of behaviorism, this primer provides an extremely readable, comprehensive and informative account of the kinds of experimental investigations with which researchers have been pre-occupied over the years (especially at Harvard). The author is to be commended for his clear presentation, especially of the sections on reinforcement and stimulus control. Usually, these concepts are made very confusing, if not totally omitted, by most writers of introductory texts. Also, frequent examples from everyday life used to illustrate theoretical points are well chosen. However, the reviewer cannot see any useful purpose served by many of the illustrations, e.g. the baby's nostril being tickled by a feather and the drawing of a fan, to elucidate the concept of energy transfer. Often, graphic representation of ideas presented in the text do not contribute anything to the points the author is trying to make. Moreover, considering the large number of excellent clinical studies reported in the literature, it is a pity the author informs his readers that "at present behavior modification outside the laboratory is more of an art than a science".

Despite the above minor criticisms, this book should be read by undergraduate students of introductory psychology and animal learning to complement more general textbooks which tend to skim over topics in the volume under review. Also, clinicians who want to know about the learning theory principles on which several treatments are based would find perusal of it worthwhile.

MAURICE YAFFÉ

Rorschach with Children. JESSIE FRANCIS-WILLIAMS. Pergamon Press, Oxford, 1968, pp. xi + 177. £1.50 flexi; £2.25 hard.

THE AUTHOR sets out to show how the Rorschach test can aid diagnosis in clinical work with different types of children, such as the emotionally disturbed, the deprived, the institutionalized and children with brain damage. As well as assisting in diagnosis, it can also help to delineate patterns and changes of personality. She is much too experienced a worker to present a black and white picture, and in particular emphasizes the overlap in response characteristics between records presented here and those of normal children. Since the subject matter is of importance and interest, it is to be regretted that rather little space was allowed for presentation of more records. For instance, in the chapter on differential diagnosis she cites only one case of a brain-damaged girl of nine, recovering from an operation for the removal of a craniopharyngioma tumour in the left frontal lobe, though this is supplemented by a brief synopsis of "signs" which seem to occur by more than chance in the responses of brain-damaged children. Further (only three unfortunately) cases of injury to the central nervous system are presented in the chapter on children with cerebral palsy (an error in numbering the cases occurs in this context). Maladjusted children, some with psychotic signs in the Rorschach, fare better for seven cases are discussed. Finally there are two other kinds of material presented—a serial study of an institutionalized boy where the findings from the Rorschach are discussed in relation to those of the CAT and Bene-Anthony, and another interesting long-term study of a boy who had a severe schizophrenic breakdown at the age of five years. Included also is a chapter devoted to the study of patterns of personality growth in deprived children, which differs from an article by the author published in 1961* only in its introduction and conclusions.

While the material offered in this book is of interest, it is not large and overall gives a somewhat "bitty" impression. If space was limited it is a pity that the first very brief chapter on projection and the second on a survey of projective techniques could not have been omitted. The records are easily comprehensible only to those who have used the Rorschach test, and preferably with children. They are unlikely to need these chapters or even the sections dealing with characteristics of children's Rorschachs. Filling the liberated space with further examples and discussion would have rounded out the book in a more satisfactory way. But more information on case work with the Rorschach test is always welcome particularly when presented by someone with the author's experience and long-standing knowledge.

GERTRUDE KEIR

*FRANCIS-WILLIAMS, J. (1961). *J. Child Psychol. Psychiat.* 2, 5-20.

Drugs and Schoolchildren. R. S. P. WIENER. Longman, London, 1970, pp. viii + 238. £2.50.

THIS BOOK is an adaptation of a university thesis and therefore its style and content are concise and restricted to a limited area of research. Its appeal will be mainly professional to those who are seeking facts in the field of drug taking by young people. It will therefore have special interest for psychiatrists, psychologists, sociologists, social workers and teachers, for whom it should be indispensable reading. However, it should also appeal to any intelligent observer of the contemporary social scene.

The author introduces his subject by defining the word "drug" and providing a brief description of the major drugs concerned. This may be helpful to those unfamiliar with the subject but it is perhaps a pity that he does not offer a clearer classification. This material is somewhat irrelevant in its detail to the main body of the research.

Apart from this the author presents his material very lucidly and persuasively. He outlines his reasons for undertaking the survey, including the need to establish what the real problem is in terms of numbers, and to discover whether or not a full-scale educational programme on drugs at school would be appropriate in this country. The latter point is extremely relevant in view of the publicity given to drug abuse and of the inadequately considered recommendations that such programmes are of necessity an effective factor in prevention. The author himself went to great pains to ensure that his own research did not arouse a morbid interest in the youngsters he studied.

After an excellent review of the literature, much of which is highly speculative and lacking in sound methodology, the author outlines the difficulties in working in the drug field and in doing research on young people. In particular he discusses two other important major studies on teenage behaviour to which his study is both relevant and complementary. He reached his final hypotheses after a variety of field work and a pilot study, and for his method chose an analytical cross-sectional design comparing groups of subjects on different points at the same period of time. His reasons for doing this and for employing a questionnaire technique are well presented and the whole research was carefully and diligently planned. The description of this alone offers the research student excellent material for study.

The results presented by the author offer factual confirmation of observed drug behaviour in schoolchildren and also provide the answers to the questions which the author was originally asking. In addition they usefully pose some further interesting questions. One of these relates to the lack of any significant difference between drug takers and controls in terms of the family background and the personality of the subjects. The author is probably correct in assuming that there are fundamental problems here which are too deep and complex for his questionnaire to reveal, and moreover that different patterns of drug use do exist among schoolchildren which do not emerge in this study.

From the clinician's viewpoint these become obvious in the course of his intimate experience with young people and their families, especially where the more dangerous drugs are persistently abused. To achieve this level of study both longitudinal and interview techniques are really essential in which such aspects as the cultural elements and the meanings of drug taking are more profoundly explored.

The author concludes that with only 10 per cent at the most of the school population having ever tried drugs, the problem is not widespread and does not warrant the uncertain effects of a preventive educational campaign. With this finding the reviewer firmly agrees and would suggest that if there is to be any form of educational programme on drugs it should be directed towards the adult and the subject of parenthood.

DR. PHILIP BOYD

The Adopted Child. He Really Doesn't Need to be Told! JOSEPH G. ANSFIELD. Charles C. Thomas, Springfield, Illinois, 1971, pp. vi + 56. \$5.75 (hardback).

THE AUTHOR'S thesis is nothing less than the attempt to convince his readers that there exists overriding evidence in favour of never revealing to an adopted son or daughter, the fact of his adoption.

In support of this contention he outlines the reasons for adoption, scans the psychology of growing up and adduces facts from his experience as a psychotherapist to adolescents in order to prove that

the truth about adoption is more harmful than secrecy. What in my view he fails to demonstrate is that the adverse factors he sees are, in fact, a result of the knowledge of having been adopted. Not without reason Professor Ansfield is sedulously careful to say how every avenue may be closed through which the child might come to be aware of his adopted state and to point guidelines in the event that such an accident occurs; but the risks of leakage of this information from some source or other are so pervasive that, to the present reviewer, it appears that parents converted to the author's viewpoint would be living in a world of wishful thinking rather than of hard facts. Nor, in my opinion, does he weigh sufficiently the positive values of shared understanding between adoptive parents and their children. The last chapter begins with an account of contraception which is irrelevant to the subject of adoption and is too sketchy to be of value in itself; while its concluding pages are devoted to administrative and political considerations. Towards the end of the book there is a falling off in grammar and in syntax and some of the psychological concepts are too superficial to be meaningful.

The value of this small volume resides principally in its cogent claim that no kind of stigma should attach to the state of adoption.

D. T. MACLAY

La Pratique du Rorschach. NINA RAUSCH DE TRAUBENBERG. Presses Universitaires De France, Paris, 1970, pp. 208. 12F (Paperback).

THIS little book is essentially a practical manual ("un outil de travail") for French users of the Rorschach. It does not shed any new light on the test itself or on personality-testing in general. English-speaking readers will not find any more in it than in the older manuals by Beck or Klopfer.

In this country the book can only be recommended to psychologists who may be using the Rorschach on both sides of the Channel. They will find it blissfully clear, concise and well set out.

MARYSE METCALFE

aesthetic sensitivity, development in children

SENCK, H. J. (1972) The development of aesthetic sensitivity in children. *J. Child Psychol. Psychiat.* **13**, 1-10.

Summary—Five hundred and twenty-seven male and 544 female children, aged 7-15, and 400 male and 400 female art and non-art students were administered a shortened version of the Maitland Graves Design Judgement test. Of the 40 items used, a scale of 10 items was selected on the basis of factor analysis, and a comparison of the scores of the art and non-art groups; this scale had high internal reliability, both for the students and the children. The scores of the children on this scale increased with increasing age, but the increase was small, although statistically very significant, and irregular; non-art students scored higher than the children, and art students higher than non-art students. Personality questionnaire scores were found to correlate with aesthetic sensitivity in the children. No correlations were found between sensitivity and amount of formal art teaching received at school. This, together with the relatively high scores achieved by quite young children aged 7 and 8, suggests that sensitivity is not due to formal training in visual arts.

problem-solving strategies, normal and severely subnormal children

WOODWARD, W. MARY (1972) Problem-solving strategies of young children. *J. Child Psychol. Psychiat.* **13**, 11-24.

Summary—A complex problem consisting of 12 graded elements was presented to normal children of 1½-5 yr and to severely subnormal children, in order to attempt to elucidate some aspects of early cognitive development. Strategies adopted have been analysed in terms of the plan and TOTE unit concepts proposed by Miller *et al.* It is suggested that an early phase when a repetitive behavioural sequence is directed towards an externally given end-point, is followed by one in which the sequence is terminated at the appropriate point by the interpolation of a manipulative or observing action after each repetition.

absolute and relative codes in 4-yr-old children

LAWRENSON, WENDY and BRYANT, P. E. (1972) Absolute and relative codes in young children. *J. Child Psychol. Psychiat.* **13**, 25-35.

Summary—This paper considers whether pre-school children can perceive and remember quantity relations, and compares the relative ease of relational and absolute codes for these children. The methods used in former experiments which seem to suggest that young children cannot code relations such as "larger" and "smaller" are criticised. An experiment with 120 4-yr-old children is described which avoids the weaknesses of these earlier experiments. The results of this experiment, which directly compare relative and absolute tasks, strongly suggest, (i) that pre-school children code quantity relations very well, and (ii) that, contrary to previous suggestions, these children find it easier to code relations than to code absolute values.

a modified Junior Maudsley Personality Inventory for "normal" and "clinic" children aged 8-12yr

LOKARE, V. G. (1972) The clinical application of the Lokare's Modified Junior Maudsley Personality Inventory with particular reference to 8 to 12-yr-old children. *J. Child Psychol. Psychiat.* **13**, 37-46.

Summary—The results of administering the LMJMPI to 280 normal children and 280 clinic children of 8-12 yr of age are reported. The analysis gave rise to two dimensions of personality which can be identified as neuroticism and extraversion and are completely independent of each other. The findings also show the ability of the LMJMPI to distinguish the clinical group from normals, even when used on a young population of 8-12-yr-old children. This suggests that the LMJMPI retains its reliability and validity when used with the younger children, and shows a reliable degree of concordance with psychiatric classification.

sexual discrimination, 4-11-yr-old children

TIN, SAUL M., BALISTRIERI, JAMES and SCHUKIT, MARK (1972) The development of sexual discrimination in children. *J. Child Psychol. Psychiat.* **13**, 47-53.

Summary—Developmental data were obtained on the ability to discriminate between sexes on the basis of dress, hair and genitalia. The focus of interest was on developmental changes in ability to discriminate on the basis of genitalia and in knowledge that genital cue constitutes the critical characteristic. It was found that about half of a group of 7-yr-old children were able to discriminate on the basis of the genital cue while significantly more than half of the 9-yr-olds manifested such discrimination. However, it was only in the 11-yr-old group that more than half of the Ss appeared to be aware that the genital cue is the *dominant* characteristic differentiating boys from girls.

modification of disruptive classroom behavior, using individual and group contingencies

GREENBERG, DAVID J. and O'DONNELL, WILLIAM J. (1972) A note on the effects of group and individual contingencies upon deviant classroom behavior. *J. Child Psychol. Psychiat.* **12**, 55-58.

Summary—A 6-yr-old male's disruptive classroom behavior was modified by a combined use of individual and group contingencies. When a tantrum occurred the child was put into an adjoining cloakroom. The deviant child, as well as the entire class, was rewarded with candy for periods of non-tantrum behavior. Although only tantrum behavior was focused upon, by the time the tantrums had decreased substantially, other deviant classroom behaviors and also decreased significantly and the deviant child's peer relationships and school work had improved.

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PERGAMON

OBITUARY

EMERITUS PROFESSOR SIR CYRIL BURT

1883-1971

WITH THE death of Professor Burt, British Psychology has lost its most eminent, influential and best-known personality. Many older psychologists were attracted to the study of psychology by the inspiration of his teaching and his writing had an impact on hundreds of others in this country and overseas. Well before death in his eighty-ninth year there had been tributes to Burt and his work; a survey of his contributions to education, an appreciation from his students (*Studies in Psychology*. Edited by CHARLOTTE BANKS and P. L. BROADHURST) and many honours conferred, including Fellowship of the British Academy. His eulogists have dwelt on his erudition, his massive contribution to knowledge and the versatility of his gifts. In this Journal we may remember particularly his work with children.

In addition to his rich personal endowment, Burt was fortunate in his education both at school—he was a brilliant scholar at Christ's Hospital—and at home. His father who, as well as being a country doctor, was a keen amateur botanist, taught him to collect and document specimens. When a little older, he visited patients with his father and was taught to listen and observe, to collate and interpret evidence. Thus he began to be trained in those processes which he afterwards put to such spectacular use in the study of individual differences, the identification and description of mental subnormality, the causes and consequences of educational backwardness and the concomitants of delinquent behaviour.

In the years between his boyhood and his comprehensive researches among London school children, Burt read Greats at Oxford where he later specialized in research on mental tests with McDougall. He also trained as a teacher at the Oxford Department of Education where he started an embryo child guidance centre there combining his assiduous study of problems with practical help for the children, their parents and teachers.

Among his father's patients were the Galton family. Burt's interest in the application of psychology to education was much influenced by Francis Galton's statistical studies in individual psychology. It was a natural progression, therefore, that when McDougall undertook to assist in a national survey of mental and physical characteristics, as proposed by Galton, Burt should become one of the research workers in Oxford devising tests of mental capacities. Having focussed on genetics through his botanical observations and on measurement through his association with the anthropometric work, he pursued the line of measuring mental abilities and combining observation, introspection and experimental method in his future work.

Before embarking on his work as the first Educational Psychologist to the London County Council in 1913, Burt had first worked in Liverpool as assistant lecturer in Physiology to Sir Charles Sherrington. Secondly, he had lodged in a settlement in

Liverpool to live alongside (as he did later in London) the people whose behaviour or characteristics he wished to study. He did not divorce the theoretical from the practical and thus he set an outstanding example of what is required of his followers who are concerned with the scientific study of psychology. Thirdly, he had carried methodology from his earlier work in the cognitive field into the study of emotionality and of aesthetics.

The four major publications resulting from Burt's work for the L.C.C., *Mental and Scholastic Tests*, *The Young Delinquent*, *The Backward Child* and *The Subnormal Mind*, are their own monument to the astonishing range of Burt's work, to his originality, his industry (there were no computers in the first decade of this century) but above all to his humanity. Whatever the multiplicity of factors with which he was dealing, the cohorts of children coming under review, he never omitted to ask "What happened to Lizzie?"

Next Burt took his gifts and the fruits of his studies into teacher training. He held an appointment at the London Day Training College where he was renowned for his brilliant lecturing. There were very large, heterogeneous groups of students ready to be impatient about digressions or to jibe at playing to the gallery but they greatly admired Burt's unerring choice of material, his wonderful command of language, the range and relevance of his illustrations and the depth of his knowledge and experience.

In 1931 Burt was appointed Professor of Psychology of University College, London. During the next twenty years, despite the disruptions of World War II, the department flourished and students increased about tenfold. The ablest of them gave Burt enormous pleasure; he challenged, stimulated and guided them, taking endless trouble in making prompt and constructive criticisms of their work. The less able sometimes drifted away. He had no time for obtuseness in this context. If Burt gave priority to research, the desire to communicate ran it a close second. His students were indebted to him for teaching of the first order. His lectures were models of presentation, incorporating up-to-the-minute material integrated into his current thinking; they were at will popular or abstruse, witty, dazzlingly speculative. He was a formidable opponent in argument ever ready to enter the lists of theoretical controversy. But he was also an entertaining conversationalist, a successful writer of popular books on Psychology and the first psychologist to be invited by the B.B.C.—in the early 1930s—to present on "the wireless" a series of talks, complete with accompanying booklet, entitled *The Study of the Mind*.

Immediately after the war the demand for educational psychologists began to grow. As a result, during the later years of his tenure of the Chair, Burt introduced at University College a course of post-graduate training in educational psychology, thereby establishing in a University Department of Psychology a course to prepare graduates for the service in schools which he himself had so brilliantly pioneered. His interest in this aspect of his work was maintained to the end of his life through his becoming the Patron of the Association of Educational Psychologists and contributing frequently to their Journal.

Retirement from University College by no means heralded a diminution of Burt's output. His energies were unabated. He continued for some years as a vigorous editor of the *British Journal of Statistical Psychology*, conducting a phenomenal corres-

pondence with contributors, colleagues and students. Those who consulted him were assured of a prompt reply to their letters right up to the time of his death. If their work appealed to him they would receive, often by return of post, pages of hand-written comment. Though criticism might be adverse, the result for the writer was clarification of the issues involved, often providing further insight into theoretical implications and encouragement to continue his researches.

In moments of recollection, and seeking to convey to those who may not have known him something of the quality of such a man, one has to resort to the most vivid of one's own impressions of his personality. Burt was over sixty years of age before I saw him working with a young, handicapped child. A professor long since might have lost some of his clinical skills but he was immediately in tune, sensitive to the child's problems; inventive in his investigations and enjoying the afternoon no less than the child who had found reassurance in the ease of communicating with him. This single experience made one realize what lay behind the vividness of his writings. Fortunately there is a further impression which may be more widely shared. Burt's voice and verbal style were unique. He had always been able to hold and interest an audience whether of international scientists or the general public. But he became deaf as he grew older and less inclined to appear in person. Sometimes an address he might have given was tape-recorded. At least on one occasion the switch was made at the last moment and a large audience, expecting to hear Burt himself were offered instead a tape recording of his address. Surprisingly the shuffle of disappointment and dispersed attention dwindled away and the disembodied voice held the audience at that indefinable level of tension that ensured easy concentration in a large group for upwards of three-quarters of an hour.

Burt was a great man who retained his great intellectual abilities to the end of his long life. He will certainly be remembered through his students and their work. One wonders in what other several contexts the impression of his work, words and personality may be carried on.

GRACE RAWLINGS

FAMILY INTERACTION AND SOCIAL ADJUSTMENT IN A SAMPLE OF NORMAL SCHOOL CHILDREN

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INTRODUCTION

CONSIDERABLE attention has been paid in recent years to the influence of family structure on personality development, and strikingly similar modes of parental functioning have been found in families containing children with neurotic, psychotic or other markedly disturbed behaviour. In an overview of the literature, Frank (1965) concludes with regard to the families of schizophrenics, that they: "... *seem to be characterized by mothers who are dominant, fathers who are passive, and considerable family disharmony. The mother is overprotective, overpossessive, and overcontrolling, yet basically, albeit unconsciously rejecting.*" However, he goes on to say: "... *each characteristic that is found to be typical of the families of schizophrenics is found to exist in the families of controls as well. . . . The results are the same with regard to families of neurotics. . . . Moreover, in many respects, it would be hard, on blind analysis, to distinguish the family which produced an emotionally disturbed child from that which produced the so-called normal or well-adjusted child*" (pp. 197-8).

In view of this conclusion, it seemed to the present authors that a sample of children taken entirely from the "normal, well-adjusted" end of Frank's continuum, might usefully be examined to see whether patterns of parental functioning as described above did in fact vary within such an apparently homogeneous group, and if they did, whether an imbalance in functioning on the part of the two parents was related to at least a degree of disturbance in the social behaviour of the child, even if such behaviour had never been officially classified as "disturbed".

To this end, a study was made of 25 children, all of whom were "normal" in the sense that none was receiving special psychological, educational or legal attention. Teacher assessments of each child's capacity to relate to his teacher and to his fellow pupils at school were taken as an indication of his extra-familial social adjustment, whilst recorded discussions between both parents and the child in response to a shared projective test administered within the home, formed the basis of an analysis of family interaction. The type of behaviour studied closely resembled that which has been described by Schutz (1958) as falling within the "inclusion" area of need. Of this he says:

"The child's need for inclusion requires a satisfactory relation regarding interaction and association with people. The parent satisfies this need by spending a satisfactory amount of time interacting with the child. . . . In order to feel he is really being interacted with, the child requires undivided attention and needs to feel that he is being acted toward as a unique person. . . . A continuum of inclusion in terms of parental attitudes would involve the following . . . ignore, notice, acknowledge, pay attention to, interact with, be interested in, get to know, get to

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know well, understand. . . . Difficulties with inclusion behavior in the parent-child relation come when the parent 'abandons' the child or 'enmeshes' the child. 'Abandon' refers to lack of sufficient attention or contact, and has to do with both the quantity and quality of the contact. 'Enmesh' refers to the opposite difficulty, the parent always including the child in every activity, at the expense of the child's privacy. According to the principles both of constancy and identification, abandoned children would tend to become undersocial and enmeshed children to become oversocial. . . . The ideal relation between parent and children in the inclusion area is between the two extremes of abandoned and enmeshed. . . . Such a relation tends to develop children who are comfortable either in the presence or absence of others, the type that has been called 'social' (pp. 86-87).

"The interpersonal behavior of the undersocial person tends to be introverted and withdrawn. Characteristically, he avoids associating with others and doesn't like or accept invitations to join others. . . . The oversocial person tends toward extraversion in his later interpersonal behavior. Characteristically, he seeks people incessantly and wants them to seek him out. He is also afraid they will ignore him" (pp. 25-26).

The type of extra-familial social behaviour focussed upon in the present study was concerned with the child's capacity to respond appropriately to a teacher, whose attention must be shared with other children in his class without his either withdrawing from competition for attention or being over-anxious about receiving it. In addition, it was concerned with his capacity to mix easily with his own peer group at an age (10- and 11-yr-old) when good group relationships are an issue of major importance to the child. Thus the criterion of adjustment adopted centred precisely around the issue of being sufficiently prominent and valued within a group situation.

It was assumed in the study that patterns of verbal interaction recorded during a discussion task in which the child and both parents participated, would reflect in miniature patterns of prominence and attention-giving existing within that family triad in its day-to-day interactions. It was expected that the children rated most adjusted at school would be those who were found during the discussion task to have good "inclusion" experiences, in that they were able to participate in the discussion and receive a certain amount of attention, hence to feel valued and wanted; but at the same time, it was expected that they would be presented by their parents with a model of mutual sharing, both in terms of verbal prominence and in terms of attention-giving. Without the additional experience of having attention occasionally turned away from him toward a specific other, it seemed unlikely that the child would have learned to believe in the continuance of his own value whilst acknowledging his separateness from his parents, and without such experience he would be unlikely to feel secure in a wider social setting such as school, where he could not be the recipient of constant attention.

It would follow from Schutz's theory, that a general lack of inclusion might lead to very withdrawn, under-social responses at school, whilst too much attention from both parents might lead to markedly over-social, attention-seeking behaviour at school. However, the pattern of imbalance in parental functioning described by Frank and others as typical for disturbed offspring, suggested that the less-adjusted children would have one withdrawn parent and one over-prominent, over-attentive parent, and, on this basis, disturbed social behaviour at school seemed likely to lead

to an alternation between over-social and under-social behaviour, rather than a consistent adherence to either one of these behaviour patterns.

METHOD

The material for this study had already been gathered by one of the authors (G.D.) in co-operation with another psychologist as part of a wider survey of child behaviour and family interaction (see Gill and Dobson, 1970).

Subjects

Twenty-five children (11 boys and 14 girls) aged between 10 and 11 yr participated with their parents. All the children were in their final year at one of two primary schools in the London area. All were non-immigrant, and living at home with both their parents. The socio-economic status of the families was, roughly speaking, middle class, and the children came from the more intelligent stream of their year in their respective schools. Siblings were not included in the study. The co-operation of the parents was sought through the school head, the proposed study being described as an attempt to discover the relationship between the imaginations of parents and their children, and the child's behaviour at school. It was stressed that the investigation was to be one of normal families. Just over 50 per cent of the families contacted through the first school agreed to participate, and approximately 75 per cent from the second school.

Collection and scoring of data

The family situation. Each family was visited at home by appointment. The 2 psychologists brought with them a tape-recorder, projector, screen, and slides of 10 pictures depicting various emotionally-charged, family-related situations. The pictures were sufficiently ambiguous for differences in perception to be expected. Care was taken to induce a relaxed atmosphere before starting, and the subjects were then shown the pictures for 2 min at a time, each member indicating his own perception of the picture privately, without discussion. The series was then shown again, the family having been asked to discuss each of the pictures in any way they considered appropriate. Joint discussion of each picture was recorded for 2 min per picture, and later transcribed verbatim. From transcripts of these joint discussions, two interaction indices were constructed for each family member by the present authors, as follows:

Participation score. A subject scored 1 point for each occasion on which he spoke during the discussion task, regardless of the length of the speech, or the number of themes put forward. If the speaker was interrupted and later continued his speech, this still counted as the same participation. Thus the participation score reflected the number of times an individual made a verbal contribution to the joint discussion, but not the length of contributions or their quality.

The total number of participations made by each family member was then expressed as a percentage of the total number of participations made by the family as a whole. This percentage amount was the individual subject's participation score, and it was assumed to reflect the extent to which that individual was verbally prominent in relation to the other two members of the family triad.

Pairing score. Only participations appearing at some point to be directed toward a specific family member were counted as pairing participations. If directed toward each other member in turn, a point was scored for each recipient of the attention, but no more than one pairing point was given per recipient per participation.

Indications of pairing were taken to be; (i) remarks clearly addressed to another, (ii) remarks taking up something said by another unless clearly not addressed to that person, and (iii) questions directed at another. If it was unclear to whom the question was addressed, the person answering it was assumed to be the recipient. Whilst this method was open to error, it was thought that the answering of a question necessarily indicated either the presence of a concurrent non-verbal indication of directed attention, or, failing this, at least a degree of habitual rapport between the speaker and the one who answered.

Pairing participations were summed for each speaker, and the number of such participations directed toward one specific other member was then expressed as a percentage of the speaker's total pairing participations. For example, a mother addressing 200 participations to her husband and 200 to her child would obtain a 50 per cent pairing score in relation to both husband and child, whilst a father addressing 70 participations to his wife and 50 to his child, would obtain a 58 per cent pairing score in relation to his wife, and a 42 per cent child-pairing score. Parents' pairing scores were assumed to indicate the extent to which the child was more or less attended to, in comparison with the other parent.

Participations were scored by both authors for direction of pairing, 92 per cent agreement being reached. In the few cases in which agreement could not be reached even after discussion, the participation was not included in the pairing score. At the time of scoring, the author involved in collecting the data may have had some general impression of school adjustment ratings as well, but the other author had no knowledge at all of these ratings.

The child's behaviour in school. The form teachers in the 2 schools were asked to complete Stott's (1966) *Bristol Social Adjustment Guide*, part VI: "The child in school". The present study was confined to an assessment of the child's adjustment from his ratings on 2 sections only: (i) attitudes to teacher, and (ii) attitudes to other children. Characteristic behaviour assumed here to indicate good adjustment may be summarized as ranging from "not noticeable" to "spontaneity in interacting with both teacher and other children, responsiveness to others, but no signs of over-demandingness in seeking attention". Maladjustment was characterized by behavioural items indicating depression, unforthcomingness, anxiety about approval, hostility, lack of concern, restlessness, withdrawal and some other signs.

Nine children had no score at all for maladjustment, and these were termed the "Adjusted" group in the sample. Eight children with one or two signs only, were termed the "Middle" group. The remaining 8 children had between 4 and 13 signs, and these subjects, showing a fair degree of maladjustment, were termed the "Disturbed" group. Owing to the smallness of the sample, it was not possible to subdivide this group according to exact type of behavioural disturbance, so that inclusion in the group depended solely upon the total number of signs considered to indicate maladaptive behaviour, that were underlined by the teacher as being typical of the child.

Hypotheses

Hypotheses in relation to the two extreme groups, the "Adjusted" and the "Disturbed", are stated below. It was thought that the "Middle" group would show results intermediary to the other two.

(1) It was expected that there would be a greater discrepancy between the participation scores of the 2 parents in the "Disturbed" group than in the "Adjusted" group, reflecting an imbalance in the sharing of parental prominence within the family in the "Disturbed" group.

(2) It was expected that mothers of "Disturbed" children would have the higher participation score, and that scores would be higher than those for mothers in the "Adjusted" group, mothers having frequently been found to play a prominent role in families with disturbed children.

Conversely, fathers were expected to have lower participation scores in the "Disturbed" group than in the "Adjusted" group, withdrawn fathers having been more often found in disturbed families.

(3) Mothers in the "Disturbed" group were expected to have higher child-pairing scores than mothers in the "Adjusted" group, over-attentiveness toward the child having been found to be a feature of mothers with disturbed offspring.

(4) It was expected that fathers in the "Disturbed" group would have lower child-pairing scores than fathers in the "Adjusted" group, again on the basis that fathers of disturbed children tend to be withdrawn in relation to them.

Predictions were not made regarding the family discussion behaviour of the child subjects, but this was expected in general to reflect parental trends.

RESULTS

For the sake of brevity, the parents of the children in the three groups will, from now on, be termed "Adjusted", "Middle" or "Disturbed", in the same way as their children. Average participation and pairing scores are given for the 3 groups in Table 1, together with significant differences between the 2 extreme groups as assessed by a one-tailed Mann-Whitney *U* Test.

Participation scores

As expected, there was more discrepancy between the participation scores of "Disturbed" parents than between those of "Adjusted" parents, with "Disturbed" mothers showing significantly more participation than "Adjusted" mothers, and "Disturbed" fathers showing significantly less than "Adjusted" fathers. A lack of verbal prominence was in fact one of the most distinctive features of the "Disturbed" father group, with 6 out of 8 fathers showing less than 30 per cent participation, whereas all 9 "Adjusted" fathers showed more than this.

Differences between participation scores for the "Middle" group and the other two groups did not reach the 5 per cent level of significance at any point, but average scores fell between those for the two other groups.

There was no apparent difference between the groups of children with regard to participation scores, which ranged in each group from just over 20 to just under 40 per cent. Thus no child was excluded from the discussion, but at the same time, no child was markedly over-prominent in relation to the combined performance of

TABLE 1. AVERAGE PARTICIPATION AND PAIRING SCORES FOR THE 3 FAMILY GROUPS, AND DIFFERENCES BETWEEN THE "ADJUSTED" AND "DISTURBED" GROUPS AS ASSESSED BY A ONE-TAILED MANN-WHITNEY *U* TEST*

	Average scores			Difference between "Adjusted" and "Disturbed" groups	
	"Adjusted"	"Middle"	"Disturbed"	<i>U</i>	<i>p</i>
<i>Participation scores of:</i>					
(a) Mothers	33.2	39.9	41.5	13	0.025
(b) Fathers	36.1	31.0	27.3	11	0.01
(c) Children	30.7	29.9	31.1	33	—
(d) Difference between parental scores	8.0	10.0	16.2	17.5	0.05
<i>Pairing scores of:</i>					
(a) Mothers with their children	49.1	56.0	64.3	11	0.01
(b) Fathers with their children	50.3	39.9	35.3	21.5	—
(c) Children with their mothers	54.3	60.3	79.2	8	0.01

*Differences between the "Middle" group and the other two groups did not reach the 5 per cent level of significance.

both parents together, a finding which may in part account for the fact that even the "Disturbed" group of children had made a passably good adjustment to the school situation.

Pairing scores

Mothers throughout the sample showed a tendency toward pairing behaviour, in that the percentage of their total participations expressed as pairing was on average 70 per cent with only 3 mothers showing less than 60 per cent, and the more they participated the more they tended to pair, a Spearman rank-order correlation of 0.44 being found when participation scores and percentage of participations expressed as pairing were compared ($p < 0.05$ for a two-tailed test). However, as expected, mothers from different groups varied in the way in which they divided their pairing between father and child, and "Disturbed" mothers showed significantly more child-pairing than did "Adjusted" mothers.

Pairing behaviour on the part of the children throughout the sample indicated that there was a bias toward mother-pairing whenever this was encouraged, a Spearman rank-order correlation of 0.69 being found between mothers' child-pairing scores and children's mother-pairing scores when these were compared. This

is beyond the 0.1 per cent level of significance for a two-tailed test, and it suggests that in Schutz's terms, a tendency to "enmesh" the child on the part of the mother is easily reciprocated by the child. As might be expected from this finding, "Disturbed" children showed a significantly greater amount of mother-pairing than did "Adjusted" children.

Average child-pairing scores for "Middle" mothers and average mother-pairing scores for "Middle" children fell between those for the other two groups, but differences between scores were not significant at the 5 per cent level.

Fathers throughout the sample showed less tendency toward pairing behaviour than did mothers, the average percentage of participations expressed as pairing being 62 per cent with only 8 fathers showing more than 70 per cent. Neither did they show the same tendency as mothers to increase pairing behaviour with increased participation, a Spearman correlation of -0.05 being found between their participation scores and the percentage of participations expressed as pairing.

Contrary to expectation, differences between child-pairing scores for the "Adjusted" and "Disturbed" groups failed to reach the 5 per cent level of significance. As a group, the "Disturbed" fathers in fact showed a great deal of inconsistency in the amount of child-pairing they displayed, with scores ranging from 3 per cent and 7 per cent at the lower end of the scale to one extreme score of 83 per cent. "Adjusted" fathers showed more uniformity and an absence of extreme pairing behaviour in that their scores ranged from just over 30 to just on 77 per cent. Some fathers in the "Middle" group again showed extreme child-pairing scores, with a range of 0-82 per cent; differences between child-pairing scores for this group and for the other two did not reach the 5 per cent level of significance.

A Spearman correlation of 0.57 was found when fathers' child-pairing scores and children's father-pairing scores were compared for the whole sample together. This result is significant at the 1 per cent level for a two-tailed test, and it indicates that attention directed by fathers toward their children was on the whole reciprocated, though not so markedly as in the case of mothers.

The above results, taken together, indicate that unbalanced patterns of verbal behaviour in the home were reflected in turn by the child, both in his school behaviour and in his unbalanced parent-pairing behaviour at home. The three parental factors most reliably related to school disturbance were low participation scores for fathers, and high participation and child-pairing scores for mothers, a finding very much in keeping with previously reported studies of seriously disturbed families.

In order further to demonstrate the importance of all three of these factors, the families studied here were next assigned a score for "parental adjustment" in the following manner. Average scores for the 25 families together were found for: (1) Fathers' participation, (2) Mothers' participation, and (3) Mothers' child-pairing. One point for parental adjustment was allocated to a family if the relevant score was equal to or more than the average (31 per cent) for father's participation, or equal to or less than the average for mother's participation (38 per cent) and for mother's child-pairing (56 per cent). Thus the maximum number of points for parental adjustment was 3 and the minimum 0.

It will be seen from Table 2 that all the families from the "Adjusted" group had at least 2 points for parental adjustment, whereas only 1 family from the "Disturbed"

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*Differences between the "Middle" group and the other two groups did not reach the 5 per cent level of significance.

both parents together, a finding which may in part account for the fact that even the "Disturbed" group of children had made a passably good adjustment to the school situation.

Pairing scores

Mothers throughout the sample showed a tendency toward pairing behaviour, in that the percentage of their total participations expressed as pairing was on average 70 per cent with only 3 mothers showing less than 60 per cent, and the more they participated the more they tended to pair, a Spearman rank-order correlation of 0.44 being found when participation scores and percentage of participations expressed as pairing were compared ($p < 0.05$ for a two-tailed test). However, as expected, mothers from different groups varied in the way in which they divided their pairing between father and child, and "Disturbed" mothers showed significantly more child-pairing than did "Adjusted" mothers.

Pairing behaviour on the part of the children throughout the sample indicated that there was a bias toward mother-pairing whenever this was encouraged, a Spearman rank-order correlation of 0.69 being found between mothers' child-pairing scores and children's mother-pairing scores when these were compared. This

is beyond the 0.1 per cent level of significance for a two-tailed test, and it suggests that in Schutz's terms, a tendency to "enmesh" the child on the part of the mother is easily reciprocated by the child. As might be expected from this finding, "Disturbed" children showed a significantly greater amount of mother-pairing than did "Adjusted" children.

Average child-pairing scores for "Middle" mothers and average mother-pairing scores for "Middle" children fell between those for the other two groups, but differences between scores were not significant at the 5 per cent level.

Fathers throughout the sample showed less tendency toward pairing behaviour than did mothers, the average percentage of participations expressed as pairing being 62 per cent with only 8 fathers showing more than 70 per cent. Neither did they show the same tendency as mothers to increase pairing behaviour with increased participation, a Spearman correlation of -0.05 being found between their participation scores and the percentage of participations expressed as pairing.

Contrary to expectation, differences between child-pairing scores for the "Adjusted" and "Disturbed" groups failed to reach the 5 per cent level of significance. As a group, the "Disturbed" fathers in fact showed a great deal of inconsistency in the amount of child-pairing they displayed, with scores ranging from 3 per cent and 7 per cent at the lower end of the scale to one extreme score of 83 per cent. "Adjusted" fathers showed more uniformity and an absence of extreme pairing behaviour in that their scores ranged from just over 30 to just on 77 per cent. Some fathers in the "Middle" group again showed extreme child-pairing scores, with a range of 0-82 per cent; differences between child-pairing scores for this group and for the other two did not reach the 5 per cent level of significance.

A Spearman correlation of 0.57 was found when fathers' child-pairing scores and children's father-pairing scores were compared for the whole sample together. This result is significant at the 1 per cent level for a two-tailed test, and it indicates that attention directed by fathers toward their children was on the whole reciprocated, though not so markedly as in the case of mothers.

The above results, taken together, indicate that unbalanced patterns of verbal behaviour in the home were reflected in turn by the child, both in his school behaviour and in his unbalanced parent-pairing behaviour at home. The three parental factors most reliably related to school disturbance were low participation scores for fathers, and high participation and child-pairing scores for mothers, a finding very much in keeping with previously reported studies of seriously disturbed families.

In order further to demonstrate the importance of all three of these factors, the families studied here were next assigned a score for "parental adjustment" in the following manner. Average scores for the 25 families together were found for: (1) Fathers' participation, (2) Mothers' participation, and (3) Mothers' child-pairing. One point for parental adjustment was allocated to a family if the relevant score was equal to or more than the average (31 per cent) for father's participation, or equal to or less than the average for mother's participation (38 per cent) and for mother's child-pairing (56 per cent). Thus the maximum number of points for parental adjustment was 3 and the minimum 0.

It will be seen from Table 2 that all the families from the "Adjusted" group had at least 2 points for parental adjustment, whereas only 1 family from the "Disturbed"

group had as many as 2 points, the difference between the 2 family groups being significant beyond the 0.1 per cent level for a two-tailed Mann-Whitney Test. A considerable difference was found between the "Middle" and "Adjusted" groups for parental adjustment scores, but somewhat less difference between the "Disturbed" and "Middle" families.

Within the "Adjusted" group, no family had both a mother showing more than 38 per cent participation and a father showing less than 31 per cent, but 3 of the 8 "Middle" families showed this pattern, and 4 of the 8 "Disturbed" families. The "Disturbed" family scoring 2 points for parental adjustment did so in terms of participation scores, but it also showed the extreme child-pairing score of 83 per cent mentioned earlier, for the father.

TABLE 2. RELATIONSHIP BETWEEN SCORES FOR PARENTAL ADJUSTMENT AND DEGREE OF DISTURBANCE IN SCHOOL, AS INDICATED BY THE NUMBER OF FAMILIES IN EACH CATEGORY*

Family group	Total number of points gained for parental adjustment			
	3	2	1	0
"Adjusted"	6	3	—	—
	EB EB	MG		
	EB EG	YG		
	EB MG	YG		
"Middle"	2	3	1	2
	EG (2)	EB (1)	YG (1)	EG (2)
	YB (2)	MG (1)		OB (1)
		YB (2)		
"Disturbed"	—	1	4	3
		EB (8)	EG (13)	EG (9)
			EG (13)	MG (4)
			YB (7)	YB (6)
			YB (6)	

*Sex and sibling position are indicated for each child as follows:

EB = eldest boy; YB = youngest boy; MG = middle girl;
EG = eldest girl; YG = youngest girl; OB = only boy.

Numbers in brackets refer to the number of signs for disturbance at school.

Differences between the family groups for parental adjustment scores reached the following levels of significance for a one-tailed Mann-Whitney *U* Test:

- Between the "Adjusted" and "Disturbed" groups: $p < 0.001$ ($U = 1.5$).
- Between the "Adjusted" and "Middle" groups: $p < 0.025$ ($U = 14$).
- Between the "Middle" and "Disturbed" groups: $p < 0.08$ ($U = 17.5$).

Details of the children's sex and sibling position are also given in Table 2, as well as their scores for school disturbance. It will be seen that there was very little difference between the 3 groups in the distribution of either sex or sibling position. The size of the sample did not permit conclusions to be drawn regarding the possible importance of these factors when taken in combination with one another,

Eleven of the children came from one school and 14 from the other, the proportion of boys and girls in each being about equal. One teacher was a man and one a woman, but there was no indication that ratings for disturbance were related to the sex of the teachers in relation to their pupils, or that ratings for disturbance came from one school rather than from the other.

Finally, it must be added that within the "Disturbed" sample, no clear evidence emerged regarding over-social or under-social behaviour at school in relation to unbalanced parental patterns of verbal behaviour. It was suggested earlier that a veering between the two might be expected as a result of differing parental models at home, and in 5 out of the 8 cases this alternating or moody pattern was noticed by the teacher at school. However, in two other cases consistent patterns of withdrawal were shown, and there was 1 case of consistent attention-seeking. It is perhaps noteworthy that in these 3 cases, the children were all girls with fathers showing outstandingly low scores: in 1 case the father only had a 13 per cent participation score, and in the other 2 cases, although the fathers' participation scores were somewhat higher, their child-pairing scores were those already noted as extremely low, namely 3 and 7 per cent respectively.

DISCUSSION

In this study of verbal prominence and pairing in triadic family discussions, the results were in keeping with trends found in other studies of more disturbed subjects, as summarized by Frank and quoted at the beginning of this paper. That is to say, even within a sample of children who could all be seen as normally well adjusted in terms of their social behaviour at school, considerable differences in degree of harmony and balance in parental patterns of behaviour were found to exist at least within the area of verbal functioning, and where the child showed some signs of disturbance at school, these signs were found to relate to parental behaviour corresponding to the "over-dominant mother, withdrawn father" syndrome so frequently described by workers in this field. To conclude from this that parental functioning within the restricted area of overt verbal behaviour alone accounted for variations in school adjustment would be to over-simplify the problem, however. In addition to the "inclusion" dimension of behaviour reflected in the scoring system employed here, Schutz suggests two other equally important areas of need which must be fulfilled for successful development to occur, namely the handling of issues of "control" and the encouragement of "affection" relationships with specific individuals. He himself compares his 3 areas of inclusion, control and affection to the 3 stages of development known in psycho-analytic terms as oral, anal and phallic (although the terms are not directly interchangeable), and viewed from this latter standpoint, one would expect a child in the latency phase studied here to have successfully negotiated all three such stages of development if he was to show no signs of disturbance in his school behaviour, even allowing for the fact that disturbance would be at its lowest ebb during latency.

The likelihood of the child having attained to such a level of emotional maturity could be expected in turn to depend to some extent upon the degree of maturity and interpersonal adjustment attained by the parents themselves. Where their relationship was unsatisfactory, particularly at an intimate sexual level, it might be expected that

both would experience a sense of disappointment and personal failure. A mother might well seek to compensate for her disappointment by turning too much to her child, whilst simultaneously opposing his development toward autonomy and the formation of relationships with others, particularly when the "other" was her unsatisfying, unacceptable husband. If, in addition, she felt the child's early demands as a threat to her maternal capacities, this could only add to the degree of anxiety and unconscious hostility felt both by herself and by her child in relation to one another.

A father who was unable to feel secure in the knowledge that he had a satisfactory, fully sexual relationship with his wife would in his turn be unlikely to risk a further setback by attempting to relate to his child in defiance of his wife's overt or covert antagonism, especially since he could also be expected to feel excluded by an apparently close mother-child twosome. That children respond on the whole more readily to pairing bids made by their mothers than to bids made by their fathers is suggested by the child-parent-pairing correlations reported in this study. Thus the family disharmony which Frank notes as so frequently characterizing the families of disturbed children is certainly not difficult to account for in psychodynamic terms, and aspects of this constellation have been commented upon by many writers.

In the present study, an analysis of the quality of verbal interactions made during the family discussion task yielded little evidence as to the presence or absence within the 25 families of disharmony between the parents or of a need to be particularly controlling within the task situation; the reason for this probably being that no joint conclusion regarding the meaning of the pictures was required of the families. A certain tendency on the part of some "Disturbed" mothers to invalidate their children's percepts without sufficient explanation was however noticed, and this may have reflected a lack of real affectional feeling for the child or even the presence of unconscious hostility toward him.

An analysis of the individual family members' percepts of certain of the pictures on the other hand contributed sidelights of considerable interest to the above theoretical discussion. The first of these pictures depicted a woman watching a small girl holding a baby, all three sitting on a bed. This picture was thought to be the most likely to elicit feelings about good or bad early mothering, so the individual responses of mothers and children given prior to the group discussion were scored for indications that they saw the mother-figure as being in some way inadequate, anxious, or concerned with protecting the baby, or the baby as not being adequately cared for, anxious or clutching for support. Further comments of this nature made during the joint discussion were also scored. It was found that 33 per cent of the 9 "Adjusted" families, 13 per cent of the 8 "Middle" families and 78 per cent of the 8 "Disturbed" families yielded at least one such percept. Thus an underlying feeling of insecurity about this early level of development does seem to have been particularly prevalent within the "Disturbed" group, though it should be stressed that no family was markedly preoccupied with such themes.

The third picture to be shown depicted a man and a woman lying on the ground embracing. This was thought likely to elicit percepts indicating the extent to which the husband and wife showed inhibition or anxiety in acknowledging the obviously close sexual theme presented. Percepts given by the husband and wife prior to the

joint discussion were scored for inhibition if there was a failure to convey adequately the closeness of the relationship, for example, by describing the couple as "kissing" or "courting" without further comment to the effect that they were "embracing", "cuddling", etc. Inhibition was also considered to be present if the activity perceived was expressed as passive description only, e.g. "a close relationship" or "a pair of lovers". Anxiety of a social nature rather than inhibition was thought to be present in cases where concern was in some way expressed as to the exact nature of the couple's relationship, or the likelihood that such activities really were carried on, similarly, if terms were used either of a somewhat "distancing" nature, e.g. "snogging", "canoodling", etc. or with the implication that the couple were somehow trapped together. Both inhibition and social anxiety shown in the individual percepts and the joint discussion were scored as indicating embarrassment in response to a sexual theme. (For a study along somewhat similar lines see Gill, 1970.)

Here again, the results were interesting, in that 75 per cent of the "Disturbed" families yielded at least one such sign of embarrassment on the part of each parent, compared with 50 per cent of the "Middle" families and 22 per cent of the "Adjusted" families. Twenty-five per cent of "Disturbed" families, 38 per cent of "Middle" families, and 22 per cent of "Adjusted" families had one parent only with such a sign. Thus all the "Disturbed" families gave some sign of parental embarrassment in response to the sexual stimulus. In contrast to the low proportion of signs of mother-child disturbance, the "Middle" group showed a high degree of sexual disturbance. It was, in fact, this group which tended to give indications of social anxiety, 75 per cent of "Middle" families yielding a comment of some sort regarding the likelihood or otherwise of the couple being married or engaged or whether people "do do that sort of thing", whereas only 1 "Adjusted" family yielded such a comment and 38 per cent of "Disturbed" families.

On the basis of responses to these 2 pictures alone, therefore, it may be suggested that disturbance in the child resulted not only from learned patterns of unbalanced overt-sharing behaviour, but also from a more generalized retardation of emotional development occurring in conjunction with signs of a disturbed parental relationship. In summary it may be said that the distinguishing feature of the "Disturbed" group's thematic material was the presence of a number of signs, not only of parental sexual embarrassment, but also of anxiety over early mother-child relationships. The distinguishing feature of the "Middle" group was the presence of parental sexual embarrassment with very little evidence of mother-child anxiety. In the "Adjusted" group there were few signs of disturbance at either level.

It might of course be expected that overt parental verbal style would in some way reflect parental emotional adjustment as indicated by the thematic material, and this probability was investigated by dividing the 25 families into 2 groups. Families were allocated to one group if they showed a certain thematic sign of disturbance (sexual disturbance for father/for mother/mother-child anxiety) in conjunction with a certain sign of overt parental disturbance in verbal style (mother's participation > 38 per cent/father's participation < 31 per cent mother's child-pairing > 56 per cent) or, alternatively, if they showed no sign under scrutiny in either the behavioural or the thematic dimension. The other group consisted of those families having one of the signs but not the other. Distributions were in each

case subjected to a binomial test of significance. A clear relationship between thematic disturbance and overt behaviour did not emerge, but there was some indication that maternal sexual embarrassment in particular could have had a bearing on the family constellation of verbal behaviour patterns. Whereas thematic indications of sexual embarrassment on the part of fathers did not show a significant relationship to their participation scores, those for mothers did show some definite relationship to low verbal participation on the part of fathers ($p = 0.044$ for a two-tailed test), although they did not show a relationship to high participation scores for mothers themselves. There was also some relationship between sexual embarrassment on the part of mothers and high maternal child-pairing scores ($p = 0.044$ for a two-tailed test), but a relationship was not shown between scores for mother-child thematic anxiety and high maternal child-pairing scores or parental participation scores.

Thus it seems that where the mother in the family was in some way inhibited or anxious about her sexual relationship with her husband, she did, as was suggested earlier, turn to her child for attention and satisfaction more often than did mothers who seemed to have made a better sexual adjustment to their husbands. This high degree of child-pairing probably did serve further to deflate the father's belief in his own value, which would in any case be diminished by a failure to satisfy his wife sexually even if he himself did not also appear to be sexually inhibited. Thus a syndrome of disappointment appears to have been set up in these families, resulting in withdrawal on the part of the father and over-concern for the child on the part of the mother. This over-concern did not, however, appear from the thematic indications to be linked with anxiety on the part of mothers about the mothering role as such.

Although an analysis of the thematic material may be considered to have cast some light on the emotional difficulties underlying the patterns of overt behaviour found in the course of this study, it remains unclear whether signs of school disturbance resulted mainly from a sense of tension existing between the parents, possibly leading to greater anxiety in children with residual mother-child anxieties, or whether the children were more affected by the overt patterns of sharing in the realm of prominence and attention which they had grown accustomed to expect as a result of intra-familial conditioning. Certainly it seems from the results of the study reported here that overt behavioural features must have played some part in determining school behaviour as measured, and it is probable that the more immature the child was in terms of his emotional development, the less he was able to show a flexible adaptation to a new environment, calling for new standards of behaviour. Thus the "Disturbed" children in this sample, who according to the thematic material were probably those suffering most residual disturbance in the area of the early mother-child relationship may have been those most needing to cling rigidly to disturbed but familiar patterns of behaviour in terms of prominence and attention-sharing; "Middle" children, who as a group were apparently also faced with disturbed parental relationships (including in some instances a high degree of maternal child-pairing and overt paternal withdrawal) may have had less need to act out exaggerated, unbalanced patterns of behaviour at school precisely because they were suffering less from residual early anxiety.

In speaking of "disturbance" in this context, it is of course important to stress

that all these children were in fact reasonably well-adjusted, and that the signs of disturbance ascribed to them were very mild in character, typical descriptions being, for example: "inclined to be moody", "always finding excuses for engaging teacher", or "on the fringe" in relation to other children. Similarly, thematic signs of mother-child and parental sexual disturbance were of a kind which could only be described as mild. It is also important to remember that "adjustment" necessarily remains a relative term. A study conducted within a different social or cultural setting might indicate that other family patterns related more closely to "adjustment" at school; similarly, a different set of cultural mores might result in disharmony between the parents being expressed as maternal withdrawal and paternal over-compensation at an overt level.

Having taken these points into consideration, however, it may still be said in conclusion that trends found in the present study, like those found in other studies of much severer degrees of disturbance, all served to underline the importance of a balanced pattern of parental functioning both at an overt and at an underlying emotional level, in aiding the social development of the child and his smooth transition from home to the wider environment of school.

SUMMARY

Twenty-five children aged 10-11, none of whom had been psychiatrically assessed as "disturbed", were rated for their social behaviour at school. Nine with no signs of disturbance were termed the "Adjusted" group, 8 with one or two signs the "Middle" group, and 8 with four or more signs the "Disturbed" group. Significant differences were found between the "Adjusted" and "Disturbed" groups for parental verbal behaviour during a family discussion task, "Disturbed" mothers being comparatively over-prominent and over-attentive to their children, "Disturbed" fathers being withdrawn. Overt behaviour appeared to reflect mild underlying emotional disturbances within the "Disturbed" and "Middle" groups.

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PSYCHIATRIC PATIENTS SEEN AS CHILDREN AND ADULTS: CHILDHOOD PREDICTORS OF ADULT ILLNESS

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INTRODUCTION

THE NATURAL history of psychiatric illness is a subject in which most express interest, many believe they understand, but on which relatively few systematic studies have been published. Despite the widespread conviction that adult behaviour patterns are largely laid down in childhood, few attempts have been made to reassess persons seen in childhood, when they become adults.

Longitudinal studies on children have generally been concerned only with a short follow-up not extending into adulthood (Levitt *et al.*, 1959; Shepherd *et al.*, 1966; Perez-Reyes and Lansing, 1967), with small numbers of patients (Morris *et al.*, 1954; Michael *et al.*, 1957), without adequate controls (Witmer and Keller, 1942; Bronner, 1944; Morris *et al.*, 1956), or with a highly selected childhood diagnostic group (Otterstrom, 1946; Warren, 1960; Robins, 1966; Rutter *et al.*, 1967). Studies were either totally retrospective (Oleinick *et al.*, 1966), concerned with non-psychiatric childhood populations (Birren, 1944; Skodak and Skeels, 1949; Tuddenham, 1959; Stewart, 1962), or with only one category of outcome, for example schizophrenia (Frazee, 1953; Gardner, 1967). Most of the quoted studies differ from the present on more than one of the above variables.

The biases and disadvantages of retrospective studies of the natural history of personality development and psychiatric illness are well known as are the difficulties of prospective studies. The present work has used medical records as a basis for a study of the natural history of psychiatric illness, in which the child presentation data has been used retrospectively but was obtained at the time of the childhood attendance and therefore not reconstructed in the light of the child's adult status.

The overall aims have been: to determine whether and to what extent children referred to the Department of Psychiatry of the Royal Children's Hospital, Melbourne, subsequently become patients of the Victorian Mental Health Department; what features of the childhood presentation and patient are associated with adult illness; what connection there is between the child and the adult clinical picture; and to determine, by interviewing adults, the reliability and validity of their perception of their own childhood referral.

This paper is a report on the first phase of this study.

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AIMS

(1) To determine whether psychiatric disorders in childhood lead to a higher incidence of psychiatric morbidity in adulthood.

(2) To determine what childhood clinical, social, or demographic factors are most likely to be associated with subsequent adult illness.

METHOD

The names and dates of birth of all children (3370) referred to the Department of Psychiatry, Royal Children's Hospital, during the decade 1 January 1945 to 31 December 1954 who were born prior to 1946, were obtained from the records of that Department. The names of all the females were submitted to the Commonwealth Bureau of Census and Statistics who provided the relevant married names. The Central Patients' Register (Krupinski and Stoller, 1962) of the Victorian Mental Health Department was then searched to determine which names from the above two lists were recorded as having been patients of the Mental Health Authority during the period June 1961–June 1969, this being the period during which the present register had been in operation.

Of the patients common to the Department of Psychiatry, Royal Children's Hospital, and the Victorian Mental Health Department, all those of both sexes born prior to 1943 and 50 per cent of those born during 1943–1945 inclusive were selected as the cohort. (The 50 per cent excluded were randomly selected, the purpose being simply to reduce the amount of data to be handled and inspection showed the greater number of the children to have been born in the period 1943–1945). A similar sized group, matched for sex and year of birth, was selected from the Department of Psychiatry, Royal Children's Hospital list, to act as controls in that they were similar to the cohort in all respects except that they did not, as adults, become patients of the Victorian Mental Health Department (they could of course have become patients elsewhere).

The names of all the patients in both cohort and control were presented to the author, who was not aware of which patients belonged to which group, and he extracted in a uniform manner data concerned with social class, family constellation, psychiatric symptomatology, temporal relations, intelligence and diagnosis from the Royal Children's Hospital case histories. Diagnoses were made by the author on each of the three axes of the proposed "Tri-axial Classification" (Rutter *et al.*, 1969). An additional method of classification used was by "reason for referral" (Buckle, 1970). This provides for eight mutually exclusive referral categories which are largely self-explanatory. Social class was assigned according to the method suggested by Krupinski and Stoller (1968).

The childhood presentations of cohort and control were then compared in detail and the results analysed statistically.

RESULTS

Twelve per cent (406) of the (3370) children who presented to the Department of Psychiatry at the Royal Children's Hospital during the decade 1 January 1945 to 31 December 1954 had already been adult patients of the Victorian Mental Health Department by early 1969, when their ages would have been within the

range 25–40 yr. The male to female ratio was about two to one in both childhood and adult referrals.

To assess whether these children had a greater than expected rate of admission, as adults, to the Victorian Mental Health Departments facilities, the first admission rates of all persons, born between 1931 and 1945 inclusive, for the period 1961–1969 were added (Statistical Bulletins 1–8). This cumulative admission rate was 3 per cent and so it is apparent that the child psychiatric referrals have a four fold increase, over the general population, in their risk of being adult patients of the Victorian Mental Health Department by the ages reached at the time of this study. There was a non-significant tendency for the females from the child referrals, and from the total population, to have a higher referral rate as adults.

When those suffering from mental subnormality were excluded then of the 2982 original child referrals 298, or 10 per cent, were on the Victorian Mental Health Authority's register. This represents a referral rate, as adults, of three- and one-third times the expected.

From the 406 adult patients the names of 104 females and 188 males were taken to form the cohort as described under Method. The control group of 118 females and 220 males was selected (see Method) from the children who did not become adult patients.* Six of the cohort and eight of the controls were subsequently discarded as they had never arrived for their childhood consultations and two of the cohort and eight of the control group were discarded as the history sheets of their childhood presentation had vital information (for example history of illness) missing. This left 101 females and 183 males as the cohort for comparison with 112 female and 210 male controls, in terms of the childhood presentation.

In both males and females the onset of symptoms was more often during the first year of life ($p < 0.001$) in the total cohort group than in the controls though this difference disappeared *when the mentally retarded were excluded*.

The mean age at presentation was 7.7 yr (range 1–14 yr) for both males and females with a non significant tendency for cohort to be younger than controls.

Reasons for referral (Table 1) did not distinguish at a significant level between the sexes or between those who became adult patients and those who did not.

When each referral category was taken separately there were no significant differences between those who did well and those who did badly for age at onset except in the case of males referred because of their behaviour in society. Of the 34 males in this category, in 11 of the cohort and 3 of the controls, the onset of the behaviour was at a pre-school age compared with a later onset in 8 cohort and 12 controls. This tendency for the symptoms to appear earlier in the future adult patients is significant ($p < 0.05$).

Though the overall ratio of males to females was 2 : 1 this did not apply to the first axis diagnosis (Table 2) of mental subnormality where the numbers were nearly equal. In both sexes mental subnormality was significantly more common in those with the worse prognosis.

Personality disorder was more common in males in the cohort and in females in the control group. The diagnoses adaptation reaction and normal variation were

*A technical oversight in the selection of the control group resulted in an excess of subjects with no matching in 27 male and 11 female subjects.

TABLE 1. NUMBERS IN EACH REFERRAL CATEGORY

Referral category	Male		Female		Total Number	%
	Cohort	Control	Cohort	Control		
Handicaps (mental or physical)	59	66	39	38	202	33
Behaviour at home	40	39	12	20	111	18
Medical symptoms (e.g. enuresis, anxiety, nightmares)	24	39	18	22	103	17
Educational difficulties	24	34	21	17	96	16
Behaviour in society	18	16	4	9	47	8
School refusal	10	8	2	2	22	4
Behaviour at school	5	6	5	3	19	3
Withdrawal or other serious generalized psychiatric symptoms	3	2	0	1	6	1
Totals	183	210	101	112	606	100

less common in the future adult patients than in the controls, though, in males the former and in females the latter differences were not significant. Normal variation, adaptation reaction, developmental disorder and neuroses, combined, were less common among the cohort than among the controls ($p < 0.05$). Conversely, the remainder, combined, were more common among those destined to be adult patients.

On the second axis of intellectual level (Table 3) the findings of the first axis with respect to subnormality were confirmed and the cohort were more often subnormal than the controls ($p < 0.01$ for males and $p < 0.001$ for females) and females more often subnormal than males ($p < 0.05$).

On the third axis of "associated or aetiological factors" where each child could receive more than one coding, in about 28 per cent of each group "no known factor" was recorded. The only variable which predicted prognosis was "disease or disorder of the central nervous system" which occurred in about 28 per cent of the cohort and 14 per cent of the controls ($p < 0.001$). When the subnormals were excluded from analysis "disease or disorder of the central nervous system" remained more common in cohort (15 per cent) than in controls (9 per cent) and this difference also reached significance ($p < 0.05$). Amongst the factors which did not aid prediction

TABLE 3. SECOND AXIS DIAGNOSES

		Normal		Mild		Subnormal Moderate		Severe	
		No.	%	No.	%	No.	%	No.	%
Male	Cohort	125	68.3	38	20.8	19	10.5	1	0.5
	Control	172	81.8	29	13.5	7	3.5	2	1.0
Female	Cohort	56	54.4	27	26.7	15	14.9	3	3.0
	Control	86	76.8	19	17.0	4	3.5	3	2.7

TABLE 2. DISTRIBUTION OF FIRST AXIS DIAGNOSES

	Males						Females						Total	
	Cohort		Control		Total		Cohort		Control		Total		No.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Mental subnormality only	39**	21	21**	10	60*	15	37***	36	16***	14	53	25	113	18
Personality and conduct disorders	27***	15	11***	5	38	10	3*	3	11*	10	14	7	52	9
Other clinical syndromes	17	9	12	6	29	7	7	7	10	9	17	8	46	8
Neurotic disorders	32	17	48	23	80	20	21	21	18	16	39	18	119	20
Specific developmental disorder	21	12	36	17	57	15	9	9	14	13	23	11	80	13
Adaptation reaction	45	25	72	34	117	30	21*	21	35*	31	56	26	173	28
Normal variation	2*	1	10*	5	12	3	3	3	8	7	11	5	23	4
Total	183	100	210	100	393	100	101	100	112	100	213	100	606	100

The differences between cohort and controls in each sex or between the totals of males and females are significant when indicated by asterisks.
 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

TABLE 4. OCCURRENCE OF SYMPTOMS IN CERTAIN AREAS PER 100 PERSONS

	Male		Female		Total population
	Cohort	Control	Cohort	Control	
Neurotic	44	42	35	31	39
School	36	40	25	29	34
Speech	32	35	36	34	34
Conduct	42	32	24	29	33
Slow learning	37**	22**	48*	29*	32
Toilet	15	15	15	18	15
Sleep	13	17	7	13	13
Psychosomatic	10*	18*	9	11	13
Habits	11	9	7	5	9
Eating	8	6	9	4	7
Sexual	2	2	2	4	2

Differences between cohort and control non-significant except when marked by asterisks.
 $*p < 0.025$, $**p < 0.005$.

were "congenital malformations", "social and material", or "emotional and attitudinal" environmental factors.

The areas in which the children had symptoms are presented in Table 4. The average number of areas in which children had symptoms clustered about a mean of 2.3 per child. Slow learning ability was more common in females than in males and in both sexes, was more common in those who did worse on follow-up. No other variable distinguished cohort from control at a significant level except that psychosomatic symptoms were associated with a good outcome in males. There was a non-significant trend for symptoms of disturbed conduct to be associated with a good outcome in females and a bad outcome in males.

When the area of complaint was considered within different ages at presentation, the female cohort were seen to have more symptoms during infancy than the controls ($p < 0.001$) and the male cohort to have more during their pre-school years than the controls ($p < 0.01$). When the separate areas were compared on age at presentation the only feature of significance in either sex was a tendency for the females with conduct problems to have their symptoms at a pre-school age whereas in the controls they only became apparent later ($p < 0.05$).

Within diagnostic groups on the first axis there were no significant differences in age at onset or presentation between sexes or between cohort and control, except that male personality disorders presented prior to adolescence more often than female ($p < 0.05$) and in females, subnormal cohorts presented prior to adolescence more often than controls ($p < 0.05$).

Duration of symptoms prior to presentation did not distinguish future Mental Health Department patients from the others or male from female, either within separate diagnostic categories or in total.

When the number of attendances were compared (Table 5), the subnormal attended less often than the normal ($p < 0.001$) in both sexes and persons referred because of educational difficulties and handicaps attended less often than those in other referral categories ($p < 0.05$ and $p < 0.01$ respectively) for males only and

TABLE 5. TOTAL NUMBER OF ATTENDANCES

	Male		Female		Total
	Cohort	Control	Cohort	Control	
1	65	49	28	32	173
2-5	69	99	51	44	263
6 or more	49	62	22	36	170

those females referred because of medical symptoms attended less often than those in other referral categories ($p < 0.05$). In terms of first axis diagnoses, male subnormals attended less often than the rest and male adaptation reactions, developmental disorders and neurotics attended more often (each $p < 0.01$) than the rest. Amongst the total female group subnormals attended less frequently and adaptation reactions and neurotics more frequently (both $p < 0.001$) than the rest. In comparing cohort with control there were no significant differences in females on any of the first axis diagnoses. In males, however, controls attended more often than cohort ($p < 0.01$) and within separate diagnostic categories the only significant difference was that those of the future adult patients suffering from "subnormality only", attended less often ($p < 0.05$) than the subnormals who did not become patients of the Victorian Mental Health Department.

It was only possible to assign social class to 84 per cent of the males and 81 per cent of the females, due to the parents occupations not being recorded in the remainder.

Social class at referral (Table 6) did not distinguish males from females or adult patients from non-patients. The social class of the total population at risk was not available for comparison.

Within females there were no significant differences between cohort and control but in males social class IV was more common ($p < 0.05$). With social class comparison between referral categories no significant differences emerged.

When the children were compared in terms of family unity (Table 7), assessed simply by comparing those living with both parents, those living with one parent and those not living with any parent, no significant differences between the sexes or between cohort and control emerged. When prognosis was considered within separate

TABLE 6. SOCIAL CLASS DISTRIBUTION AT CHILDHOOD REFERRAL, BASED ON FATHER'S OCCUPATION

		I	II	III	IV	V
Male	Cohort	2	13	8	75	60
	Control	5	11	9	62	84
Female	Cohort	2	10	6	30	32
	Control	0	8	10	41	33
Total		9 (2%)	42 (8%)	33 (7%)	208 (41%)	209 (42%)

TABLE 7. PARENTAL CONSTELLATION AT TIME OF CHILDHOOD REFERRAL

	Male				Female				Total	
	Cohort No.	%	Control No.	%	Cohort No.	%	Control No.	%	No.	%
Living with both parents	140	76	172	81	77	76	85	76	474	78
Living with one parent	29	16	24	11	12	12	13	12	78	13
Not living with any parent	14	8	14	7	12	12	14	14	54	9

diagnostic and referral categories the only significant difference was in those males referred for medical symptoms where the cohort were less likely ($p < 0.05$) than the controls to be living with both parents.

DISCUSSION

The results indicate that 20 years after their referral to the Department of Psychiatry, Royal Children's Hospital, the adults have a fourfold increase over the comparable general population in their risk of being patients of the Victorian Mental Health Department. This underestimates the total adult morbidity of this group as it does not take into account those who have attended general hospitals or private practitioners for their psychiatric morbidity. It is probable that those forming the cohort will include most of the children destined to develop serious or chronic adult morbidity as other work (Krupinski *et al.*, 1967; Mellson, 1969) has shown that even where factors mitigate against admission to the Victorian Mental Health Department's facilities, these are operative to a much smaller degree in schizophrenia than in the neuroses.

When analysing the figures (from Tables 1-4) it must be remembered that as the total child psychiatric population had a fourfold increase (three- and one-third if subnormals excluded) in their chance of becoming adult patients, for any individual diagnosis or category to be associated with no increased adult morbidity, the ratio in that category of cohort to control would have to be less than 1 : 4. This was not the case with any diagnosis, referral category or symptom type.

As expected, those children diagnosed as intellectually subnormal were over-represented in the cohort and this was particularly evident in the females. Of the other diagnoses, most did not distinguish but "adaptation reaction" and "normal variation", as the glossary implies (Rutter *et al.*, 1969), were under-represented in the cohort. Personality and conduct disorders in males were associated with a very bad prognosis and this is perhaps consistent with the findings of Robins (1966) on delinquents, and Morris *et al.*, (1956) on children with behaviour disorders. However in females the opposite situation pertained and this may be contrasted with other reports (Morris *et al.*, 1956; Annotation, 1969) indicating that delinquent girls and girls with behaviour problems have a markedly increased incidence of psychiatric illness as adults. The most likely explanation for this discrepancy is that the mean age of presentation of the delinquents referred to in the other studies was about 13-14

yr whereas the girls in this study presented at a mean age of 7.7 yr. The two populations are therefore not directly comparable and are in fact probably rather different. In addition the term "personality and conduct disorders" is much broader than delinquency.

The findings with respect to area of complaint support the above, as when the child's unwanted behaviour was concerned with symptoms of disturbed conduct (e.g. aggressiveness, lying, disobedience, cruelty), independent of diagnosis; then a poor adult prognosis was found for males and relatively good prognosis for females. Complaints related to slow learning ability in the child were associated with a bad prognosis in both sexes, consistent with the poor prognosis of the subnormals.

The relatively benign nature, at least in terms of being associated with serious psychiatric illness in adulthood, of the neurotic disorders and developmental disorders is indicated by their inability to distinguish cohort from control. This does not contradict the findings of other workers who have found childhood neurosis associated with adult neuroses (Warren, 1960) and psychosis (Gardner, 1967) as the ratio of cohort to control, being markedly greater than one to three- and one-third, indicates these children have an increased expectancy of adult morbidity. As mentioned above, however, the present follow-up is also likely to have underestimated subsequent adult neuroses.

The significant excess of subnormals in the cohort is not the total explanation of the finding that "disease or disorder of the central nervous system" was the only one of the "associated or aetiological factors" considered to distinguish cohort from controls as this difference, though reduced, remained when the subnormal were excluded. That is, evidence of organic damage to the central nervous system exerts an adverse effect upon prognosis independent of intellectual subnormality. The findings that various types of environmental factors, as recorded in the histories, did not differ in prevalence between cohort and control was more of a surprise. Of some relevance to this was the finding that the percentages of "broken homes" (not living with both parents) was similar in cohort and controls. Other workers (Robins, 1966; Rutter *et al.*, 1967b) have also found that the presence or absence of a "broken home" does not influence the prognosis of childhood psychiatric illness.

It is probable that in most of those not assigned to a social class, the reason the occupation of the "head of the house" was not recorded was related to unavailable parents due, for example, to a "broken home". This would mean that many of those would probably be in social classes four and five, but the distribution between cohort and control would still remain comparable. Robins (1966) and Morris *et al.* (1956) also found social class no use as a predictor. Though comparison of social class with that of the population at risk was not possible, inspection of the figures in Table 6 strongly suggests that social classes four and five are over-represented in all childhood referrals to the Royal Children's Hospital. If this is so then it is probable that to be referred from the first three social classes, a child would need to be more severely disturbed. This suggests that though social class did not appear to have any influence on adult prognosis it may be that it exerted its influences in determining the original child referral. Therefore it is not possible to claim that measures to improve the material situation or social class standing of patients are unlikely to

directly influence their risk of later psychiatric illness, from the findings of the present study alone.

The childhood condition associated with the worst prognosis, mental subnormality, was also that for which the least attendances were prescribed. The three conditions associated with the greatest number of attendances, adaptation reaction, developmental and neurotic disorders, were those with the best prognoses. It may be that children with the best prognosis anyway receive the most treatment, as suggested by Eisenberg (1969) or alternatively, it could be claimed that the treatment was more effective in these groups of children than in the remainder. Either way it suggests that serious consideration should be given to the idea that long term follow-up studies of childhood psychiatric patients throw more light on the natural history of the disease than on the efficacy of therapy. This is supported by the work of Witmer and Keller (1942) which led them to conclude that child guidance led to better current functioning, but not to any difference in long term prognosis.

There are no completely comparable published studies of a follow-up on a children's general hospital department of psychiatry with which to compare the overall distribution of childhood diagnoses, age at presentation, duration of symptoms, social class or reason for referral. The next step in the utilization of the present data must be to compare the childhood and adulthood clinical pictures of the same patients.

SUMMARY

Of the 3370 children referred to the Department of Psychiatry, Royal Children's Hospital, Melbourne, during the decade 1 January 1945 to 31 December 1954 and who were born prior to 1946, 12 per cent were, as adults, patients of the Victorian Mental Health Department between June 1961 and June 1969. This represents a fourfold increase in expected rate. When the mentally subnormal were excluded from consideration the rate was $3\frac{1}{3}$ times greater than expected. Of the non subnormal diagnostic groups, male personality disorders had the worst prognosis. Comparing the children on such variables as reason for referral, behaviour complained of, age at onset of symptoms, age at presentation, duration of symptoms, social class and amount of treatment, little of predictive value emerged.

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COMMENTARY ON KOLUCHOVA'S "SEVERE DEPRIVATION IN TWINS: A CASE STUDY"

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IT HAS long been appreciated that properly conducted studies of children who have suffered prolonged and severe social isolation would yield data of considerable significance for an understanding of human development. Thus, writing in 1801 of earlier and inadequate reports on feral children, Itard observed in very modern terms that "in those unenlightened times so retarded was the progress of science—given up as it was to the mania for explanation, the uncertainty of hypothesis, and to explanation undertaken exclusively in the armchair—that actual observation counted for nothing and that valuable facts concerning the natural history of man were lost . . . (nevertheless) the most striking and most general conclusion . . . is that these individuals were susceptible to no very marked improvement . . . doubtless because the ordinary method of social instruction was applied to their education. . . ."

Most studies of isolated children remain little more than anecdotal, and since these are always functioning at the lowest level, there is commonly the suspicion that they were mentally subnormal in the first place. Indeed, the mothers of such children tend, as did the mother in Koluchova's study, to use this as an excuse for their own conduct. Moreover, more often than not, stories concerning feral children scarcely bear serious scrutiny (e.g. Ogburn and Bose, 1959) and there are many who believe that there is a good case for regarding these as recently abandoned psychotic or severely retarded children.

The cases so carefully described by Koluchova bear some resemblance to one discussed by Mason (1942) and Davis (1947). It has always been impressive that these two authors wrote their accounts independently and that the testimonies were not discrepant. Even so, the writers, being a speech consultant and sociologist, respectively, failed to ask some obvious psychological questions, the answers to which would have been of great value to developmental theory. Nevertheless, the findings on "Isabella" indicate in a most extreme form the existence of very powerful recovery processes commencing at the age of 6 yr, after an almost life-long period of social isolation.

The bare facts were as follows:

In the 1930s, two illegitimate children, each aged about 6 yr, who had been kept locked in attics for virtually their whole lives, were discovered in different areas in the United States at about the same time. When rescued, neither could talk, both were rachitic and both functioned at imbecile level. The more deprived of the two did not receive any special treatment and her relative status did not alter;

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her mother was herself subnormal. The other, "Isabella", had been with her deaf-mute mother alone in a darkened attic where both had been imprisoned by the mother's father. She received highly skilled treatment, learned to speak in sentences within 2 months, was reading and writing in 9 months and had a vocabulary of 2000 words after 16 months. Her I.Q. trebled in 18 months, and after two years she was considered intellectually normal. There seems little doubt that on final follow-up at age 14 this girl was considered normal. It seems, then, that 6 yr of considerable isolation (though not from a deaf-mute mother) resulting in gross retardation, did not predestine the child to an unalterable condition. Her progress was, indeed, remarkably rapid. The other case was unaltered, but whether because of severer isolation or lack of skilled treatment or because of congenital factors, or a combination of these, is unknown.

Two similar cases of 4- and 5-yr-old boys reared in complete isolation by psychopathic parents, have been reported in Poland by Szuman (1958). On discovery, they could not speak, could not stand upright, were rachitic and "gave the impression of being savages". Although the paper did not aim to discuss the subsequent development of the children, and indeed offers a very fragmentary account, it appears that after about a year these boys began to speak in short sentences. On discovery, their condition could "be likened to that of an infant. However, their development proceeded at a much faster rate, e.g. learning to walk". It is not clear whether active psychological treatment was in fact undertaken and, as in some other cases, potentially valuable information was not recorded.

It is possible to make a direct comparison between the case of "Isabella" and the Koluchova twins. In both cases, early history was normal (and the twins spent the first year of life in a children's home followed by 6 months in the care of an aunt) but the subsequent isolation of "Isabella" seems to have been more profound, although within that situation there was no indication of cruelty from the deaf-mute mother. On rescue at the ages of 6 and 7, respectively, the Davis and Koluchova children were all rachitic but "Isabella" showed a greater intellectual deficit and even rudimentary speech was not present. While "Isabella's" initially very low I.Q. trebled in the 18 months of very active treatment following discovery, the mental ages of the twins increased from 3 to 8 yr in a 2 yr period, and I.Q.s from about 40 to 95 and 93 respectively in 4 yr, a slower rate of advance but nevertheless indicating an immense acceleration of development. By the age of 10 they appeared already to be approximating to the level of relative ability ascribed to their father and further small I.Q. increments are still occurring up to age 11.

Attention should be particularly drawn to a number of points of great theoretical interest in Koluchova's paper. First, the fact that the twins spent the first 18 months of life in nutritionally normal environments may be relevant. Brain growth is considerable during this period, and evidence from malnutrition in animals, and inferences from human studies (e.g. Cravioto, DeLicardie and Birch, 1966) suggest that protein deficiency may have a direct and irreversible effect upon brain growth during the early months. It is also probable that the bases for perceptual and linguistic development were laid during this period. Second, the failure of the twins to understand the meaning of pictures and their relation to reality, is itself testimony to the length and severity of their deprivation. The successful use of special techniques

not unlike those employed by Itard in 1800-1805, showed clearly the role of learning in the development of cognitive processes.

The Koluchova paper is the most detailed account in the literature of the facts surrounding the discovery of isolated children, of their particular deficits and of their response to remedial measures. While in many ways the twins remain impaired, being educated with children 3 yr their junior, their changing status has indeed been remarkable. Malnutrition, severe cruelty, neglect and considerable isolation (though not from each other) has not predestined them to a permanent condition of severe subnormality.

In extreme form, these findings are congruent with those on other children following severe but less depriving experiences (e.g. Dennis, 1960; Rathbun, di Virgilio and Waldfogel, 1958). They indicate, among other things, the inadequacy of theories stressing the over-riding importance of early experience in the formation of later characteristics. Indeed, psychological experiences which have anything other than transitory effects must involve learning in its broadest sense. What seems to be important is not so much the early learning as the extent and duration of its subsequent reinforcement or non-reinforcement (Clarke, 1968). The relatively late age of rescue (7 yr) from 5½ yr of almost unprecedentedly bad conditions, as well as the responsiveness to remediation, underlines the resilience of these children, and has a bearing on such concepts as critical periods of development. Where studies stress the permanency of the effects of early deprivation one should examine carefully the new situation in which the child finds himself and ask whether it continues to reinforce earlier experiences. Indeed, the pessimism with which the whole area has been surrounded may have itself contributed to a passivity in the subsequent treatment of deprived children.

One awaits with the greatest interest further reports on the progress of the Koluchova twins. The author has the opportunity of conducting a unique long-term study which is already, and will be more so in the future, rich in its implications for our understanding of human development. Although there are many matters about these children which must unfortunately remain unknown, the factual account given does shed some light on the important question of the interaction of constitutional and environmental factors in the development of human characteristics.

SUMMARY

Koluchova's on-going study of twin boys who suffered extreme deprivation between 18 months and 7 yr, and who thereafter received remedial treatment, is discussed in the context of relevant literature. Malnutrition, cruelty, neglect and considerable isolation over 5½ yr did not predestine them permanently to the condition of severe subnormality which they manifested on discovery. Their greatly accelerated development confirms similar work and sheds some light on the interaction of constitutional and environmental factors in the formation of human characteristics. Results underline the inadequacy of theories stressing the over-riding importance of early experiences for later growth.

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SEVERE DEPRIVATION IN TWINS: A CASE STUDY

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CASE HISTORY

The background of deprivation

THIS is a case record of monozygotic twins, two boys *P.M.* and *J.M.*, born on 4 September 1960. Their mother died shortly after giving birth to them and for 11 months they lived in a children's home. According to the records their physical and mental development was normal at that stage. Their father then applied to take them into the care of his sister, but soon afterwards he remarried and the boys were again placed in a children's home until the new household could be established. This new family included 2 natural elder sisters of the twins, and 2 children (a boy and a girl) of the stepmother—6 children altogether, the oldest being 9-yr-old. The married couple *M.* bought a house in the suburbs of a small town where nobody knew them. All the subsequent events concerning the twins could only be reconstructed after their discovery in the autumn of 1967.

For 5½ yr the twins lived in this family under most abnormal conditions. Some of the neighbours had no idea of their existence, others guessed there were some little children in the family although they had never seen them. It is surprising that this could happen in a quiet street of family houses where the environment and social relations are very like those in a village. During the trial, however, the people next door testified that they had often heard queer, inhuman shrieks which resembled howling, and which came from a cellar leading to the back court. The father was once seen beating the children with a rubber hose until they lay flat on the ground unable to move. The neighbours, however, did not interfere in any way because they did not want to risk conflict with the children's stepmother, who was known to be a selfish, aggressive woman, unwilling to admit anyone into her house.

In spite of very good and extensive child welfare services in the country, the true situation of these children was somehow undetected by the authorities concerned. The children had never been medically examined either routinely or because of illness. They were not registered for school attendance at the appropriate age. The relatives of the natural mother of the twins complained that the children were very poorly cared for, but their complaints were never properly investigated by a personal visit to the family from a social welfare officer. It was a quite exceptional case which, because of its severity, was scrutinized very closely by the jury when the matter came to light.

The central figure in the family, and in the tragedy involving the twins, was the stepmother. All the investigations, and especially the trial at the district and regional court, showed that she was a person of average intelligence, but egocentric, remarkably lacking in feeling, possessing psychopathic character traits and a distorted system

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of values. The father was a person of below average intellect, passive, and inarticulate; the stepmother dominated the family. Her own two children (the first of them illegitimate and the second the product of a disturbed marriage which ended in divorce) were reared in early childhood by their maternal grandmother. The stepmother therefore had little experience with small children and showed no interest in them. When the twins joined the family she fed them, but the other aspects of their care were left to their father. This disinterest developed into active hostility towards the twins, and she induced a similar attitude towards them in other members of the family. The other children were forbidden to talk to the twins or to play with them. The father, who worked on the railways, was often away from home and took little interest in the boys. He probably realized that they were not receiving proper care but he was incapable of changing the situation. The twins therefore grew up lacking emotional relationships and stimulation, and were totally excluded from the family. Relationships between the other members of the family were also unnaturally cool due to the mother's abnormal personality. The elder children were well dressed, their homework was supervised and so on, but these measures seemed to have been motivated by the mother's ambitions. She accepted the 2 stepdaughters into the family though she preferred her own children, but with none of the children did she have a genuine maternal relationship.

The boys grew up in almost total isolation, separated from the outside world; they were never allowed out of the house or into the main living rooms in the flat, which were tidy and well furnished. They lived in a small, unheated closet, and were often locked up for long periods in the cellar. They slept on the floor on a polythene sheet and were cruelly chastised. They used to sit at a small table in an otherwise empty room, with a few building bricks which were their only toys. When one of their natural sisters was later examined for another reason, she depicted this scene in a drawing entitled "At Home".

The twins also suffered physically from lack of adequate food, fresh air, sunshine and exercise. At the end of August 1967 the father brought one of the boys to a paediatrician, asking for a certificate that his son was unfit to enter primary school. Because the boy looked as if he were 3-yr-old rather than 6, hardly walked, and was at first sight severely mentally retarded, the doctor agreed to postpone school entry, but insisted that the twins should be placed in a kindergarten, and that the family situation should be investigated by a social worker and a district nurse. The stepmother objected to these visits, criticized everybody concerned, and stressed that she was overworked at home. Probably anticipating further intervention by the welfare authorities, she tried to remove traces of the way in which the twins had been living.

Gradually it became clear that this was a case of criminal neglect. In December 1967 the twins were removed from the family and placed in a home for preschool children, while legal proceedings were taken against the parents. Several days after their admission to the home it was found that the twins suffered from acute rickets, a disease which has been practically eliminated in modern Czechoslovakia. The children were admitted to an orthopaedic clinic and at the same time examined by a multi-disciplinary team.

PSYCHOLOGICAL FINDINGS

On admission to hospital attempts were made to assess the mental status of the twins. It was clear that the improvement in their living conditions during the 3 months prior to hospital admission had allowed some progress to take place. For example, on admission to the kindergarten the twins did not join in any activities but were timid and mistrustful. They had to be brought to the kindergarten in a wheelchair, because they could barely walk, and when given shoes could not walk at all. During their last 3 months with the family they were not locked in the cellar and their little room was better equipped, but at the same time the stepmother's negative attitude towards them became even more acute, because she saw in them the cause of the unwelcome interference from outside.

While in hospital, the children were psychologically examined. They were encouraged to become familiar with the testing room and adapted to it very well. At first it was impossible to use a diagnostic tool which required their direct co-operation, and the preliminary step in assessment was the observation of their spontaneous behaviour, and in particular of their free and controlled play. Later it was possible to establish direct contact and to move on to more formal testing in which the author used Gesell's scale and the Terman-Merrill test.

The boys' restricted social experience and very poor general information was most strikingly shown in their reactions of surprise and horror to objects and activities normally very familiar to children of their age—e.g. moving mechanical toys, a TV set, children doing gymnastic exercises, traffic in the street, etc.

However, their inquisitiveness gradually prevailed, the reactions of terror disappeared, and they began to explore their environment, although often they were easily distracted. Their shyness with people was reduced during their stay in the children's home, and in the hospital ward they were the centre of interest. They related to adults positively and indiscriminately, in a way that is typical of deprived children. Their relations with other children were at an immature and uncontrolled level for their age.

The spontaneous speech of the boys was extremely poor. In order to communicate with each other they used gestures more characteristic of younger children. They tried to imitate adult speech, but could repeat only 2 or 3 words at a time with poor articulation. They could not answer questions, even if it was evident from their reactions that they had understood them. It was obvious that they were not used to speech as a means of communication.

Their spontaneous play was very primitive, and predominantly at first it was only the manipulation of objects, but imitative play soon developed. As they became familiar with the toys and with their surroundings in the clinic their play gradually reached more mature levels, but they continued to need adult intervention to initiate and develop a play activity and were unable to join in the play of other children.

A remarkable finding was that the boys could not understand the meaning or function of pictures. It was impossible therefore to measure the extent of their vocabulary by means of pictures, because they had never learned to perceive and understand them. We started therefore with pictures which were of the same size and colour as the real objects which they represented. After repeated comparisons

of picture and object, understanding of the relationship emerged and extended to a constantly widening range of phenomena.

The author felt that to express the boys' intellectual level in terms of an I.Q. would be quite inadequate. Their I.Q.s at that stage would have been within the range of imbecility, but qualitative analysis of their responses, their total behaviour, and their considerably accelerated development since they had been taken away from their family, all unambiguously suggested that this was a case not of a primary defect in the sense of oligophrenia, but of severe deprivation. It seemed more appropriate therefore to consider their mental ages, which in December 1967 varied for both boys around the 3-yr level, with a range of ± 1 yr for separate component items. At this time their chronological age was 7 yr 3 months.

After the period of hospitalization the children returned to the children's home where they made good progress. They began to participate with the children there; this was made easier for them by the fact that the other children in the home were some 2-3 yr younger. Relationships with adults and children improved and they acquired much of the knowledge and many of the skills appropriate to preschool children. As their health improved so their motor abilities developed; they learned to walk, to run, to jump, to ride a scooter. Similar progress was also noted in their fine motor co-ordination.

After 6 months' stay in the children's home the boys were readmitted to the clinic for a short time to enable paediatric, audiological and psychological examinations to be made. Their mental age was by this time approximately 4 yr, with a narrower range of passes on the component items than on the previous examination. There was evidence of considerable progress in habit formation, experience, and the development of knowledge.

THE FORENSIC PROBLEM

During the first period of hospitalization the investigating authorities requested a report from a forensic paediatrician, who in turn asked for a consultant psychologist's report. However, the problem of assessment seemed too complex to be handled on the basis of one or more consulting examinations. We therefore asked the investigating authorities to assign an expert psychologist to the case, who would have both the support of the court and the right of a forensic expert as well. The panel of forensic specialists followed the progress of the boys for a period of 6 months while they were in the children's home, and undertook careful control examinations during the second period of hospitalization. The problem for the panel was to assess the total developmental picture presented by the children, and to decide whether their disabilities were likely to have been congenital or acquired. The psychologist, moreover, had also to try to answer the question as to whether the twins were likely to grow up to become mentally and emotionally normal people.

The psychologist's report was of considerable importance in this case. It was necessary to disprove the statement of the defendant that the children had been defective from birth, and to prove that their disabilities were caused by severe neglect and lack of stimulation. For this reason a lengthy period of 6 months' observation was necessary, although it was apparent much earlier that the children were developing more quickly in the environment of the children's home than they ever

had in their family home. During the trial, too, we had to refute the statement of the defendant and her husband that the children had had experience of picture material and play opportunities at home.

It was more difficult to answer the question about the future development of the twins. There was no evidence from the literature on deprivation, and because the case was so exceptional we had no personal experience to guide us. We could therefore only outline a probable prognosis and assume that in a good environment the children would develop in every respect, that their developmental deficits would show a tendency to be reduced, but that it was necessary to take into account the possible consequences of such severe deprivation on the development of personality. We pointed out to the judges some of the handicapping effects of this deprivation: entry to school delayed by 3 yr, the probable necessity for the boys to attend a school for mentally retarded children, the effects on employment prospects, and the possibility of other difficulties in their social and intellectual development. We recommended that the children be placed as soon as possible in a compensating foster-home, on the grounds that even the best children's home could not be the optimal solution in the long term.

The main trial at the district court lasted for 3 days, all the forensic specialists being present. The defendant did not admit to having damaged the twins in any way. She denied that anything unusual had happened and maintained that they had been handicapped since infancy and that she had done her best for them by cooking and cleaning. She poured out her own troubles and expressed again her sense of being overworked. The court sentenced her to 4 years' deprivation of liberty and both father and stepmother also lost their parental rights.

In his final speech the public prosecutor and the chairman of the senate of judges, in confirming the verdict, emphasized the importance of the experts' reports in their evaluation of the defendant's guilt.

THE FURTHER DEVELOPMENT OF THE CHILDREN

In the school year 1968/9 the boys remained in the preschool children's home. Their mental development was better than the original prognosis had suggested. Whereas some experts were doubtful about their educability, a psychologist's assessments showed that the retardation was diminishing and that the boys had reached a level of readiness for school. Because of their retarded speech, and relatively poor fine motor co-ordination and powers of concentration, we thought that a school for mentally retarded children was indicated as an initial step, since there were greater possibilities of individual teaching and a slower pace of learning.

Simultaneously with their starting school we tried to solve the problem of their foster-home placement. A number of families were willing to take the children, but we had to assess the motivation of the applicants very carefully, considering the personalities of the potential substitute parents, and existing family structures. Finally, in July 1969, the boys were placed with a family who have been able to accept them as natural and loved children. After 2 yr observation we still consider this to be the optimal placement, although in the conventional sense the family is not a complete family at all. It consists of two unmarried middle-aged sisters, both intelligent, with wide interests, living in a pleasant flat, and capable of forming very

good relationships with the children. One of these sisters had already adopted a baby girl some years before, and this child is now an intelligent well-educated 13-yr-old. The second sister became the foster-mother of the twins. Our observations, and information from many sources, show that deep emotional bonds have been formed between the children and their foster-family, and many of the consequences of deprivation—e.g. a narrow outlook, a small range of emotional expression, etc.—which had remained during their stay in the children's home, are gradually diminishing. The boys have recollections of their original home, and though the foster-family tries to avoid reviving the past, the boys themselves will sometimes begin to talk about it; we also have touched on this during our psychological examinations. Until recently the boys did not have sufficient language ability to describe even in outline their life in their original family. If we compare their story now with the facts established during and before the trial, it is evident that their account is reliable. They have a completely negative attitude to their stepmother, and refer to her as "that lady", or "that unkind lady". They remember the names of their brother and sisters, and they recollect how they used to be hungry and thirsty, how they were beaten about the head (their scalps are badly scarred), and how they used to sit at the small table. The stepmother often carried them into the cellar, thrashed them with a wooden kitchen spoon until it broke, and put a feather-bed over their heads so that no-one would hear their screaming.

For a long time they had a dread of darkness. They appreciated the physical warmth of their new home, the good food they received, and the fact that they were no longer beaten. During our first visit to them in the foster-home we had to reassure them that we would not take them away from their foster-mother.

In September 1969 they were admitted to the first class in a school for mentally retarded children. On the basis of our observations of the children in class, the teacher's records, and our further examinations, we found the boys soon adapted themselves to the school environment and began to excel their classmates. Their writing, drawing, and ability to concentrate improved remarkably in the second term, and it became clear that this type of school would not extend them sufficiently. Accepting that there was a risk involved, we recommended a transfer to the second class of a normal school from the beginning of the next school year. In spite of the difference in curriculum and teaching methods, they proved to be capable of mastering the subject matter of the normal school, and did well enough to suggest that they have the ability to complete successfully the basic 9-yr school course which, however, they would finish at the age of 18 instead of the normal age of 15. Their schoolmates are 3 yr younger, and it remains to be seen how relations between them and the twins develop, particularly as they enter puberty; the effects on the self-confidence and personality of the twins may be considerable but only extended observation will give us the answer to this.

A summary of the psychological test findings shows that in the 15 months from June 1968 to September 1969 the mental age of the twins increased by 3 yr; this was an immense acceleration of development, indicating how the change of living conditions provided a rapidly effective compensation for the consequences of earlier deprivation.

At first the children were assessed using Gesell's Developmental Scale and later

the Terman-Merrill Scale in which their verbal level was markedly below non-verbal test items. Since the age of 8 yr and 4 months the boys have been examined by means of the Wechsler Intelligence Scale (WISC). The test scores are presented in Table 1 and indicate the low-level verbal response initially, especially in the Twin J, and the subsequent improvement over 3 yr. Both children now seem to be functioning almost at an average level for their age.

TABLE 1. WECHSLER INTELLIGENCE TEST SCORES (WISC)

	Twin P. I.Q.		Twin J. I.Q.
8yr 4 months			
Verbal	80	Verbal	69
Performance	83	Performance	80
Full scale	80	Full scale	72
9 yr			
Verbal	84	Verbal	75
Performance	83	Performance	76
Full scale	82	Full scale	73
10 yr			
Verbal	97	Verbal	94
Performance	85	Performance	86
Full scale	91	Full scale	89
11 yr			
Verbal	97	Verbal	96
Performance	93	Performance	90
Full scale	95	Full scale	93

CONCLUSIONS

This is a very exceptional case of deprivation, firstly because of the lengthy period of isolation, and secondly because of the unusual family situation which by outward appearances was a relatively normal and orderly one.

The children suffered from a lack of stimulation and opportunity for psychomotor development. The most severe deprivation, however, was probably their poverty of emotional relationships and their social isolation. The stepmother did not even partially satisfy their need for maternal nurturance. She was on the contrary, as the dominating person in the family, the instigator of hostile attitudes towards the children and an active agent in their physical and mental torment. The influence of the father was confined to occasional repressive actions. The stimulating influence of brothers and sisters was also lacking. Thus we may speak of a combination of outer and inner causes of deprivation, the inner or psychological ones being primary.

We have not found in the literature a similar case of such severe and protracted deprivation in a family. Following Langmeier and Matejcek (1968), we can define the situation of the twins as one of extreme social isolation, where the children are

still fed by people, but are almost completely isolated from human society. Cases in the literature differ from ours both in recording a shorter period of social isolation, and in showing more severe consequences of deprivation than we have so far found. We assume, therefore, that the twins were able to bear the onerous situation better than any single child would have done.

Almost 4 yr of observation of the twins have shown that in comparison with analogous cases in the literature their mental and social development has been very good. It is, however, difficult to foresee how their intelligence will develop, what the course of their development will be, how their personalities will be formed, and what residual effects of the deprivation will remain. The comparison between these monozygotic twins, living in essentially the same environment, will also be of interest.

SUMMARY

The author reports an unusual case of deprivation. Monozygotic twin boys were reared from age 18 months to 7 yr in social isolation by a psychopathic stepmother and an inadequate father. On discovery, their mental age level was 3 yr, but after treatment, a period in a children's home and approximately 2 yr in a good foster-home, they had made remarkable progress and now appear about average for their age. Forensic aspects of the case are discussed, as are features of the foster-home placement, and the significance of twinship in the recovery. Residual effects of deprivation will be studied by an extended follow-up.

Because of the criminal behaviour of the stepmother the children were exposed to living conditions which resembled those of an experimental situation. From the human standpoint, of course, it was an extremely cruel and unrepeatable experiment. From the scientific point of view, however, it was also a very valuable one. It will be important, therefore, to follow up the case over a long period, in the hope of contributing to a solution of some of the problems associated with mental deprivation.

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A NOTE ON THE EFFECTS OF ADMINISTRATION CONDITIONS UPON PERSONALITY SCORES IN CHILDREN

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INTRODUCTION

THERE ARE many examples of how certain instructions, such as to "fake good", can lead to marked changes in the questionnaire responses of adults (Ellis, 1953). There is also a study in which children were found to be able to falsify their answers to a personality inventory in very much the same manner (Eysenck, Syed and Eysenck, 1966). The extent to which subjects are capable of changing their responses under such extreme and artificial conditions seems hardly surprising. Indeed, Eysenck *et al.* interpreted the marked changes they obtained as indicating that desirability response sets were unlikely to have played a large part in the normal condition. The degree to which distortion might occur in real-life situations, where the respondent is motivated to give a good impression, has been assessed typically by comparing responses made under "job selection" conditions with those made under research conditions (Michaelis and Eysenck, 1971). In a similar way, the personality scores of high school students applying for jobs have been compared with their scores obtained under vocational guidance conditions (Gordon and Stapleton, 1956). In such studies a moderate degree of distortion is usually found to be operating. Thus, when it is clearly in their interests to do so, subjects will tend to take advantage of the fact that tests are susceptible to faking. The present study was concerned with a more subtle source of possible influence, but one that is frequently met, namely, whether or not the subject is required to reveal his identity.

It seems reasonable to suppose that subjects would tend to give a more favourable picture of themselves when completing a questionnaire under circumstances in which they are required to give their names. For this reason questionnaires are often administered under conditions of anonymity (e.g. Eysenck and Eysenck, 1969a), especially when the researchers are interested only in group results. In this connection it seems surprising that manuals for psychological tests rarely state whether the standardization procedure was carried out under "anonymous" or "named" conditions. In the absence of information as to the possible influence of this variable, it would seem preferable if tests were standardized under the conditions in which they are most likely to be used in practice. This point would be relevant when interpreting test results should the variable of anonymity prove to constitute an important influence. There is, however, little clear-cut evidence on the matter. Two studies carried out on adults are relevant but appear to provide rather different conclusions. Dunnette and Heneman (1956) investigated an attitude scale administered to employees of a department store under two conditions of anonymity. The scale was

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given to one group by the firm's personnel manager and to another group by an outside representative. Significant differences were obtained between these two conditions, which were taken to represent "literal" and "psychological" anonymity respectively. The former condition, in which the anonymity presumably appeared as less convincing, gave rise to more favourable attitudes being expressed. It was thus recommended that tests should always be given by an outside person if optimal methods of scale administration are to be approached. A recent study using a social attitude scale given to female students by one of their lecturers, however, revealed no difference between an anonymous and a named condition; the mean scores obtained by the two groups were virtually identical (Nias, Wilson and Woodbridge, 1971). Thus it may be that anonymity is an important consideration only in certain situations and for certain types of questionnaire.

In the present study it was decided to investigate children's responses to a personality questionnaire. A condition in which subjects were requested to write their names on to their forms was compared with one in which anonymity was preserved. The questionnaire employed was a revised version of the widely used Junior EPI (Eysenck, 1965) consisting of 97 items designed to measure psychoticism (*P*), extraversion (*E*), neuroticism (*N*), and a "lie" factor (*L*). Examples of items from this questionnaire, together with data on the four scales obtained in the present research, will be given later. On the basis of previous research with the JEPI and related scales it was predicted that any motivation to "fake good", manifesting itself in the named condition, would result in relatively higher scores on *L* and lower scores on *P* and *N*. In the event of these hypotheses being confirmed it would naturally follow that the correlations between the scales would be affected; in particular it was predicted that the usually found negative correlation of *L* with *P* and with *N* would be increased. Finally, because different children might attempt to falsify their answers in different ways, it was predicted that the internal consistency of the relevant scales would be lowered.

PROCEDURE

The study involved a total of 380 pupils, aged 11 and 12 years, from the first and second years of a secondary modern school. There were seven classes, largely unstreamed, in each of these two years. From each year, four classes were randomly assigned to the anonymous condition and three to the named condition. The testing was done in the pupils' own classrooms and took the place of part of a scheduled lesson. The inventory was introduced by the experimenter as forming part of a research project. The pupils in the anonymous group were told that their names would not be required, and accordingly they were asked to put a dash against the space for names at the top of the form. They were then asked to fill in the space for age (in years) and sex, and the standard printed instructions were read aloud to them before they began. The questionnaire was introduced to the six classes in the named condition in exactly the same manner, except that the pupils were asked to write their names clearly on to their forms; they were not given the usual assurances as to the confidentiality of their answers.

Talking to some of the children after the completion of testing indicated that those in the named group did tend to assume that their teacher would see their

answers (or scores); moreover these children did express some concern about this. Thus the two conditions provided typical research situations, in which there did appear to be some motivation for "faking good" in the named condition.

RESULTS

The inventories were scored for *P*, *E*, *N* and *L*; this scoring was based on a series of previous factor analytic studies and utilized 22 items for each dimension. Means and standard deviations were computed for the boys and girls separately, for each of the two experimental conditions (see Table 1). A "sex $\times$ conditions" analysis of variance was carried out for each of the four personality dimensions. This revealed a main effect due to sex on *P* and *N*, but none due to conditions; the "sex $\times$ conditions" interactions were not significant. The differences between the sexes were in the direction of boys being higher on *P* ($F = 38.3$, $df = 1/376$, $p < 0.0001$) and lower on *N* ($F = 7.1$, $p < 0.01$).

TABLE 1. MEANS AND STANDARD DEVIATIONS FOR THE FOUR GROUPS

	<i>P</i>	<i>E</i>	<i>N</i>	<i>L</i>
118 Boys anon.	5.80 (3.38)	17.07 (3.38)	11.43 (5.23)	8.27 (4.45)
98 Boys named	5.77 (3.28)	17.42 (3.29)	11.57 (4.43)	9.01 (4.66)
94 Girls anon.	3.77 (2.81)	16.75 (2.78)	12.20 (4.57)	8.94 (4.62)
70 Girls named	3.91 (2.34)	16.46 (3.19)	13.64 (4.78)	9.99 (4.39)

In order to make a comparison in terms of the structure of the scales, the product-moment correlations between the four scales were computed (see Table 2), together with internal consistency coefficients for the scales using the generalized form of the Kuder Richardson formula (see Table 3). Finally, it was decided to make a detailed comparison in terms of responses to the individual items in the inventory. The proportion of "yes" responses to each item was computed and a comparison made between the two conditions.

TABLE 2. CORRELATIONS BETWEEN THE SCALES

	<i>PE</i>	<i>PN</i>	<i>PL</i>	<i>EN</i>	<i>EL</i>	<i>NL</i>
118 Boys anon.	0.06	0.28	-0.40	-0.07	0.03	-0.45
98 Boys named	0.17	0.22	-0.29	-0.04	-0.18	-0.12
94 Girls anon.	-0.11	0.34	-0.26	-0.09	0.10	-0.19
70 Girls named	-0.07	0.20	-0.20	-0.33	-0.08	-0.35

TABLE 3. INTERNAL CONSISTENCY COEFFICIENTS FOR THE SCALES

	<i>P</i>	<i>E</i>	<i>N</i>	<i>L</i>
118 Boys anon.	0.70	0.74	0.85	0.81
98 Boys named	0.67	0.73	0.78	0.82
94 Girls anon.	0.70	0.63	0.81	0.84
70 Girls named	0.53	0.70	0.83	0.81

DISCUSSION

The results indicate little or no difference between the effects of the two conditions of administration. This conclusion arises from the four types of comparison that were made. First, the mean scores on the four scales did not significantly differentiate between the two conditions. Moreover, there are no consistent trends when these results are considered overall (see Table 1); e.g. while the scores for *L* show a slight trend in the predicted direction, the trend for *N* is in the opposite direction. Second, the correlations between the scales similarly show no consistent differences between the two conditions (see Table 2); e.g. while the *NL* correlation for girls shows a slight change in the predicted direction, that for boys shows a change in the opposite direction. Third, the internal consistency coefficients give a similar picture (see Table 3); e.g. while the consistency of the *P* scale for girls shows an appreciable drop in the named condition, the other coefficients tend to be equally high for the two conditions. Fourth, in the analysis of individual items there were several items that gave small, although significant, differences between the two conditions. These items, however, were not seen to form a meaningful group, probably because they inevitably included a number of chance effects, and so will not be elaborated on here.

In contrast to the similar results obtained from the two conditions, there were a number of differences between boys and girls. Thus the boys scored significantly higher on the *P* scale and lower on the *N* scale compared with the girls; these differences, together with the trend of results on *E* and *L*, are consistent with those obtained from other versions of the inventory (e.g. Eysenck and Eysenck, 1969b). The analysis of individual items also gave a number of large, and highly significant, differences between the sexes. The three largest differences were obtained on the following items (the percentage of "yes" answers are given in brackets for the boys and girls respectively):

Would parachute jumping appeal to you? (69 and 36 per cent);

Would you enjoy cutting up animals in Biology class? (38 and 7 per cent);

Would you like to drive or ride on a fast motor bike? (71 and 47 per cent).

These results seem meaningful in that they are in the direction that would have been predicted. A further positive result is provided by the internal consistency coefficients for the scales; these compare reasonably well with those obtained from other versions of the inventory (e.g. Eysenck, Nias and Eysenck, 1971).

The meaningful differences that emerged between the boys and girls, together with the acceptable consistency coefficients, may be taken to imply that the pupils

were responding in a truthful, or at least consistent manner under both conditions of administration. Such a conclusion is supported by the study in which Nias *et al.* (1971) found that similar scores were obtained on a social attitude scale that was completed under anonymous and named conditions. Perhaps it is only under the relatively extreme conditions, such as in job selection, that respondents will tend to falsify their answers. The Dunnette and Heneman (1956) study, mentioned earlier, may be viewed as falling into this category, since the employees may have thought that their promotion prospects would be affected should the identity of their questionnaires be discovered.

The present conclusion is similar to one which was reached by Eysenck *et al.* (1971). In their study, results were presented which led to the conclusion that under normal conditions the *L* scale serves to assess "lack of insight" rather than any tendency to "fake good". It would indeed be heartening for personality research, if we could assume that questionnaires are answered reasonably truthfully under normal conditions of administration.

SUMMARY

This paper raises the problem of respondent anonymity in test administration. A total of 380 children, aged 11 and 12 years, were given a revised version of the Junior Eysenck Personality Inventory that includes a psychoticism scale. An administration condition of anonymity was compared with one in which children were required to give their names. While the results gave no clear differences between the two conditions, the expected differences between boys and girls emerged. The correlations between the scales, and the internal consistency coefficients of the scales, also compared well with those from other versions of the inventory. It is suggested that under normal research conditions, children will tend to give honest, or at least consistent, answers to this type of questionnaire.

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DIVERGENT THINKING IN BOYS AND GIRLS*

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INTRODUCTION

It is generally assumed that there are no differences between the sexes in performances on tests of creativity or divergent thinking. On occasion, statistically significant differences do not appear (Guilford, 1959; Torrance, 1962; Haddon and Lytton, 1968, 1971), or are glossed over (Wallach and Kogan, 1965). More frequently, however, no reference to sex differences is made at all and it is not clear whether this is due to the absence of any real sex differences or because these were not examined. Twice in the last decade psychologists have been reproached for their neglect of such an important variable (Carlson and Carlson, 1960; Garai and Scheinfeld, 1968). It is particularly regrettable that in an area which represents, in Hudson's phrase "a boom in the American psychological industry" (1966), closer consideration should not be given to this factor. One finds no discussion of this topic in standard reference works such as Vernon's (1970) selection of reading on Creativity or Wallach's review of Creativity in the *Manual of Child Psychology* (Mussen, 1970). In fact, many definitive studies have even used single sex groups (Hudson, 1966, 1968; Cropley, 1967, 1968; Maw and Maw, 1970).

Now it may well be that there are no significant differences between the sexes in convergent and/or divergent cognitive styles but this is a matter for empirical demonstration rather than assumption. Indeed if no sex differences were established, then it would be imperative that this fact be reconciled with a number of germane findings regarding differences in maturation and aptitudes between males and females from a very young age (see reviews by Garai and Scheinfeld, 1968; Hutt, 1972a, b).

A closer examination of the studies that provide the necessary information in fact suggests that boys and girls do not give very similar performances at all ages on tests of creativity. In the authoritative study by Wallach and Kogan, for instance, boys and girls of 10 and 11 yr of age were repeatedly described as having "similar" distributions of scores, "similar" intercorrelations between various measures and so on. But if we examine the consistency of the performance of the boys and girls, as reflected in the intercorrelations between the various measures of the creativity tests, we find that 44 of the 45 correlations were significant at the 0.01 level of probability for the girls and only 27 were similarly significant for the boys. This suggests a much more consistent performance in girls than in boys. Furthermore, in one of the sub-

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tests of the creativity battery, boys scored substantially higher than the girls. Moreover, on the whole test, the scores of the boys and the girls were comparable on the Fluency measure, but boys scored slightly more than the girls on the Originality measure. This finding, though statistically insignificant, merits some comment in view of the close dependency of the two measures; but the authors offer none.

Ogletree (1971), with a sample of older children, found that girls scored significantly higher than boys on similar creativity tests. But the omission of any distinction between the several measures of creativity makes the finding of limited value.

In a group of 7- to 8-yr-old children, Ward (1968) obtained no significant sex differences. The overall mean scores for boys and girls respectively were as follows: Fluency 16.66, 14.93; Originality 5.01, 4.05. The direction of the differences is remarkably similar to that obtained in the Wallach and Kogan study.

The present study was conceived as the first part of a systematic investigation into individual differences in cognitive style and was concerned specifically with an examination of the performance of boys and girls.

SUBJECTS

The subjects were children from the junior classes of three state primary schools. There were 60 boys and 60 girls aged between $7\frac{1}{2}$ and $9\frac{1}{2}$ yr (mean age 8 yr, 7 mths).

Materials and procedure

Four of the 5 tests of the Wallach and Kogan battery were used: Alternative Uses, Similarities, Line Meanings, and Pattern Meanings. The children were only permitted to forgo limited periods of instruction and, due to these restrictions on time, only half the items in each of these tests were administered. The omission of the Instances test was considered justified on the grounds of its low split-half reliability as well as its smaller correlations with the other tests. In all other respects the procedure was similar to that outlined by Wallach and Kogan, except that in the time available the children had to be seen in groups of 5 or 6. Nevertheless, every attempt was made to maintain a relaxed atmosphere.

RESULTS

One of the aims of the study was to see if girls and boys responded differently to material presented verbally and that presented pictorially. Thus the Alternate Uses and Similarities scores were summed to give a composite Verbal score, and the Line and Pattern Meanings summed to give a Visual score. Both together constituted the Total score. The distributions of the boys' and girls' Fluency scores on the test as a whole are shown in Fig. 1. Though there is considerable overlap the distributions are significantly different (Table 1). This difference is considerably greater for the visual items than for the verbal items (Figs. 2 and 3). In other words, girls were able to provide more responses than boys to the items of this test and more so for the non-verbal stimuli than the verbal.

When, however, the number of *unique* responses were considered, no differences were observed (Fig. 4). Again, the performances of the boys and girls were more similar on the verbal than on the non-verbal or visual items (Figs. 5 and 6). In

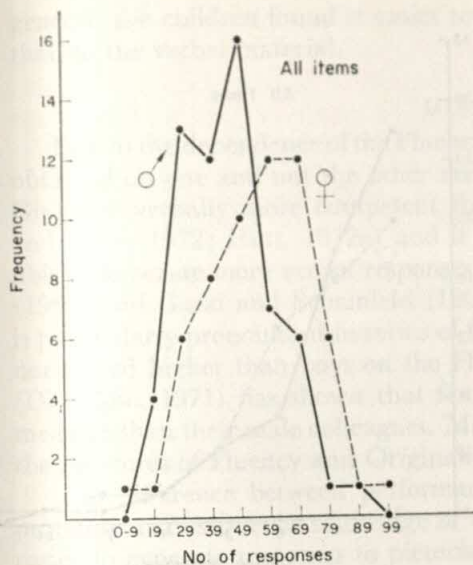


FIG. 1.

FIG. 1. Distributions of the frequency scores of 60 boys and 60 girls on the items of Wallach-Kogan creativity test.

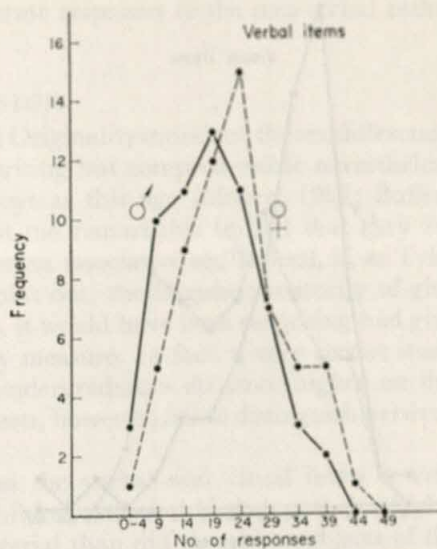


FIG. 2.

FIG. 2. Distributions of the frequency scores of 60 boys and 60 girls on the verbal items of Wallach-Kogan creativity test.

TABLE 1. MEAN SCORES, S.D.S AND SIGNIFICANCE OF DIFFERENCES

Boys			Girls		<i>t</i>	<i>p</i>
<i>Number</i>	Mean	s.d.	Mean	s.d.		
Total	40.77	15.51	52.04	18.85	3.52	< 0.001
Verbal	17.14	8.45	20.81	9.04	2.13	< 0.05
Visual	23.63	9.52	31.23	12.97	3.70	< 0.001
<i>Uniqueness</i>						
Total	5.96	5.27	7.18	6.23		n.s.
Verbal	1.72	2.02	1.98	1.97		n.s.
Visual	4.24	4.13	5.20	4.95		n.s.

The mean scores and s.d.s for the uniqueness measure are given here for interest; the similarity of the scores of boys and girls was confirmed by Mann-Whitney tests.

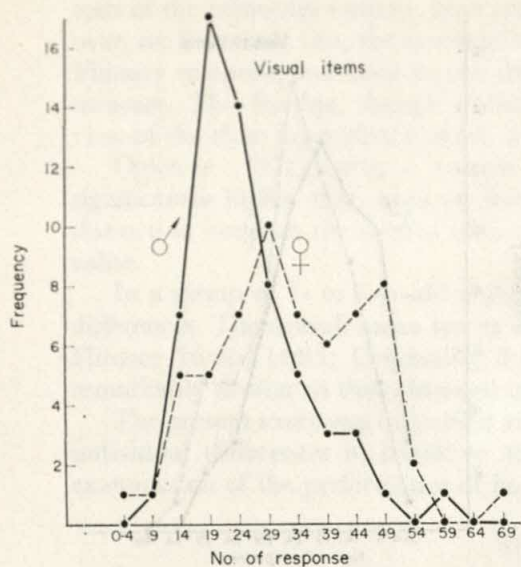


FIG. 3.

FIG. 3. Distributions of the frequency scores of 60 boys and 60 girls on the visual items of Wallach-Kogan creativity test.

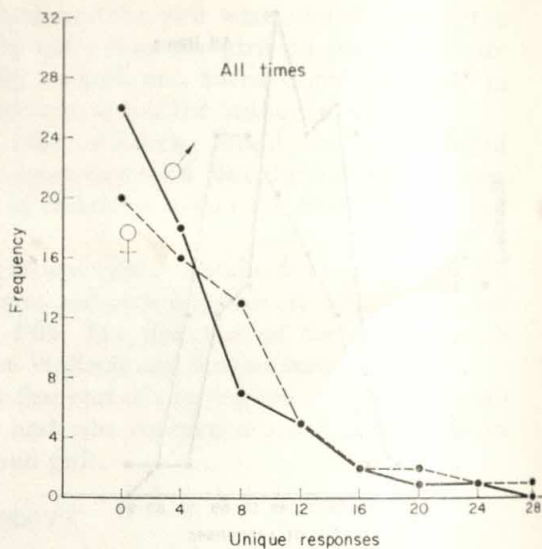


FIG. 4.

FIG. 4. Number of unique responses given by 60 boys and 60 girls to the items of the Wallach-Kogan creativity test.

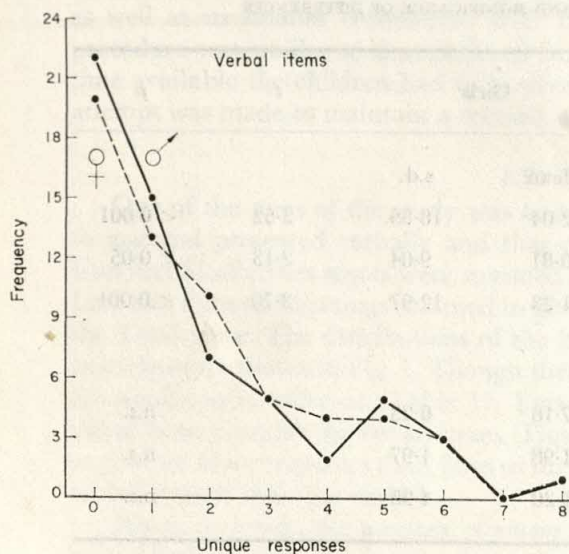


FIG. 5.

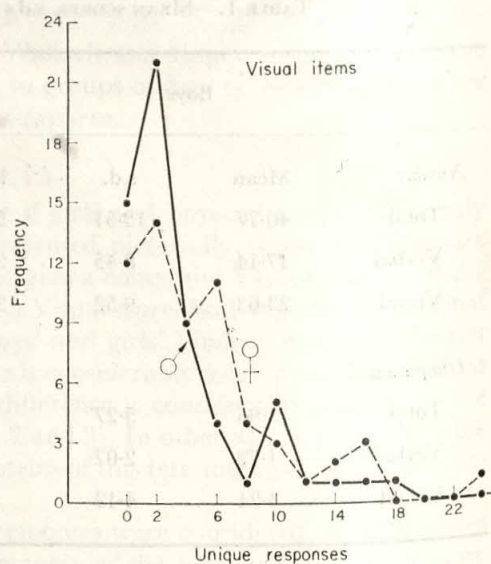


FIG. 6.

general, the children found it easier to generate responses to the non-verbal rather than to the verbal material.

DISCUSSION

Due to the dependence of the Fluency and Originality measures, the sex differences obtained on one and not the other are surprising but comprehensible nevertheless. Girls are verbally more competent than boys at this age (Moore, 1967; Buffery and Gray, 1972; Hutt, 1972a) and it is not too remarkable to find that they are able to generate more verbal responses under an associative set. Indeed, if, as Tyler (1965) and Garai and Scheinfeld (1968) point out, the linguistic maturity of girls is particularly pronounced in terms of *fluency*, it would have been surprising had girls not scored higher than boys on the Fluency measure. In fact, a very recent study (Di Scipio, 1971) has shown that female undergraduates do score higher on this measure than their male colleagues. Many tests, however, fail to distinguish between the measures of Fluency and Originality.

The difference between performance on the verbal and visual items is very probably a consequence of the age of the children—these subjects appear to find it easier to generate responses to pictorial material than did the older subjects of the Wallach and Kogan study.

The ability to generate *unique* responses is less dependent upon verbal facility and would seem to be more a function of the individual's mental restraints and style. The findings of the present study are that girls, though more fluent, are not more original than boys. At a later age, when their verbal competence is more compatible with that of girls, the boys may be expected to score higher than the girls on both measures, or at least on the Originality measure. The evidence from Wallach and Kogan (1965) and from Hudson (1968) certainly shows this trend.

It may be recalled that, even after discarding those items on which sex differences were manifest from his test battery, and maintaining (in 1941) that there were no sex differences in intellectual abilities, Wechsler was eventually forced to conclude that his findings did "confirm what poets and novelists have often asserted, and the average layman long believed, that men not only behave but *think* differently from women" (1958). Surely then, we would expect such differences to be reflected in cognitive style? Evidence in the affirmative is provided by Shouksmith's (1970) factorial study of intelligence and cognitive style in young adults. Twelve years later than Wechsler, but just as unequivocally, Shouksmith concluded:

"... males and females do not think alike. Factorially the female group is more complex than the male. . . . For females a much greater range of behaviour patterns appear to be mutually exclusive categories . . . for example, we see that 'creative associating' is opposed to 'deductive reasoning' in women, where it is not so clearly opposed in men . . . true creativity depends on an ability to switch from the one to the other of these as and when necessary. On this argument, one would expect to find fewer women among the ranks of truly inventive geniuses or scientific discoverers" (pp. 188-189).

Hudson (1968) has contended that divergent thinking may have little, if anything, to do with creative production as such. It would be very surprising, however, if there were no relation between the ability to generate novel and unusual responses to standard stimuli and the ability to generate original ideas in a less structured

situation. In fact, recent evidence, contrary to that of Roe (1952) and MacKinnon (1960) indicates a positive association between creativity and divergent thinking (Wallach and Wing, 1969). Traditionally, the paucity of female creative artists and scientists has been attributed to the inclement social climate—a climate which brings about the inexorable subjugation of the female by domesticity and the male. Terman has evocatively stated the case thus:

"Although the women equal or excel the men in school achievement from the first grade through college, after school days are over the great majority cease to compete with men in the world's work. If they do not marry at once they accept whatever kind of respectable employment is at hand. After marriage they fall into the domestic role and only in exceptional cases seek other outlet for their talents. The woman who is a potential poet, novelist, lawyer, physician or scientist usually gives up any professional ambition she may have had and devotes herself to home, husband and children. The exclusive devotion of women to domestic pursuits robs the arts and sciences of a large fraction of the genius that might otherwise be dedicated to them. My data strongly suggests that this loss must be debited to motivational causes and to limitations of opportunity rather than to lack of ability."

But Terman misses the point: about ability there has been little dispute; it is precisely in those para-intellectual qualities that determine creativity that men and women differ—in orientation, in motivation, in persistence. Productivity in music, painting or poetry can hardly be said to require more "opportunity" than productivity in prose yet there have always been women of letters. Our purpose is not to provide an *Apologia pro femina bona* but to attempt to understand the biological and psychological roots of the different capacities of men and women, boys and girls.

The "social limitation" hypothesis does not stand up to close scrutiny. Tyler (1965) has pointed out that even in those areas which are traditionally the domain of the female, e.g. cookery, needlework, etc. the innovators, the leaders, the theoreticians so to speak, are frequently male. And from Maccoby's (1966) reference to a study of Radcliffe College academics we learn that they were less productive (or creative) than their male colleagues of equivalent status, irrespective of speciality and irrespective of domestic commitments.

Moreover, the divergent style in late childhood is reliably associated with patterns of play or diversive exploration shown in early childhood for boys but not for girls (Hutt and Bhavnani, in press). Sex differences of this kind should not be construed as evidence of the superior or inferior ability of one sex or the other. Characteristic cognitive styles are, after all, only another aspect of our sexual dimorphism, and should be understood as such.

SUMMARY

Despite many findings of consistent sex differences in verbal and non-verbal skills, there has been no systematic investigation of the performance of girls and boys on tests of creativity. This is particularly puzzling in view of the unequivocal superiority of the female in terms of verbal fluency. A study of the responses of 60 boys and 60 girls between $7\frac{1}{2}$ and $9\frac{1}{2}$ yr of age on the Wallach-Kogan tests revealed that the girls scored higher than the boys on the Fluency measure but not on the Originality measure. The results are interpreted in terms of the differential development of verbal and non-verbal skills in the two sexes and the "divergent cognitive

style"—the latter apparently being more a characteristic of the male than of the female.

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CRITICAL NOTICE

Education, Health and Behaviour, MICHAEL RUTTER, JACK TIZARD and KINGSLEY WHITMORE.
Longman, London, 1970, pp. XXIII + 474. £3.50.

The work in perspective

THIS book represents a landmark for British child psychiatry. Since the inception of the child guidance movement nearly 50 years ago, child psychiatrists, whether attached to hospital departments or to the medically more isolated child guidance clinics, have struggled to develop an effective service in the face of overwhelming demands and insufficient resources. The over-extension of clinic staff who, to maintain standards, often had to be highly selective of patients or else to accumulate long waiting lists, has meant that little time was left for training junior colleagues and almost none for research. Basic information about clinical syndromes in child psychiatry, about the etiology of childhood psychiatric disorders, about the influence of changes in social, educational and medical practice on the prevalence of behaviour disorders in children and about the effectiveness of services for disturbed children remained untapped. Research relevant to child psychiatry was largely done by developmental and educational psychologists often without a clinical orientation or by doctors who were not child psychiatrists. Their failure to produce research work reinforced the low status of child psychiatrists in medical schools and perpetuated a state of affairs where deficient training facilities and resources attract few new recruits into a specialty called upon to meet ever increasing demands for service and for the teaching of other professionals: social workers, psychologists and nurses.

The work with which Michael Rutter has been associated over the past 10 years has brought about a radical change. His output, beginning with his independent investigations (*Children of Sick Parents*, 1966), and followed by a series of collaborative studies (Rutter, 1967; Rutter *et al.*, 1970), has been remarkable in size, in the scientific rigour with which he found it possible to examine clinical problems, and in the importance of the results. The present volume crowns these achievements.

Although the title of the book hardly suggests this, it is the child psychiatric approach of the research team, influencing as it did the questions asked, the methods used and the conclusions drawn, which distinguishes this work from other major British studies of child development and behaviour, (Douglas, 1964; Pringle *et al.*, 1966; Ryle, 1967; Shepherd *et al.*, 1971). The findings are of the greatest clinical relevance.

The work in outline

Education, Health and Behaviour contains the detailed reports of a series of cross-sectional surveys of school children carried out in the Isle of Wight in 1964 and 1965. The main objective of the investigations was to give a comprehensive picture of "handicap" in a total population of children in the middle years of their schooling who lived in a defined geographical area. Three forms of "handicap" were considered; (1) intellectual and educational retardation; (2) chronic and recurrent physical disorders; and (3) emotional and behavioural problems. Social handicap was explored in relation to each of the other three types of disorders.

A subsidiary aim was to devise and test out field-work methods for assessing children which could be used elsewhere. The authors were throughout concerned with the service implications of their findings. In fact, the studies gave rise to a number of important short-term longitudinal projects concerned with the evaluation of experimental changes in medical and educational practice.

The work is a triumph of collaborative research. In addition to the editors who planned the initial survey, the survey team included Drs. Graham, Rigley and William Yule. A series of other contributors including the Isle of Wight County Education Officer and the Principal School Medical Officer, took part both in the research and in the writing of the book. The research team from the mainland comprised psychiatrists, psychologists, sociologists and a paediatrician backed by the University of London Institutes of Education and Psychiatry. Many professional workers on the island, psychiatrists, school doctors, welfare officers, educational psychologists and teachers were involved in this major undertaking.

The book is in five parts: an introduction describing the background of the research; three sections dealing with the three types of "handicap" explored; and two concluding chapters summarising the findings and their implications. Each chapter is written by two (in one case three) authors and the two final chapters are by the team as a whole. Despite the apparent team approach to the writing and a uniform structure for each of the three middle sections, the writing is varied and allows personal styles to emerge. The chapters in which Jack Tizard has had a hand are particularly trenchant and lively.

The three middle sections of the book dealing in turn with educational, psychiatric and physical disorders follow the same plan; (1) criteria for selection of children to be studied; (2) epidemiology of the condition; (3) sub-groups within the main category of handicap studied; (4) relationships between the handicap under scrutiny and the other two disorders investigated; (5) social aspects of the disorder; and (6) evaluation of current treatment and educational facilities. Although a large amount of tabulated data is presented and the interactions between the conditions studied necessitated much cross-reference and repetition, the book is never dull. The sub-headings and chapter summaries ensure that the reader does not lose his way in this long volume and absorbs the material easily. Each chapter can stand alone.

What emerges is a panoramic view of physical, educational and psychiatric disorders in childhood and of their complex inter-relationships with each other and with a variety of family and social circumstances. Because of the comprehensive critical summaries of the literature relevant to each aspect of the study and because the local background, the methodology, and the implications of the results are everywhere discussed in detail, the book is highly educative and will be a work of reference for many years to come.

Selected aspects of the research

Each disorder was studied in two stages; (1) by screening the total population of a defined age using pragmatic criteria in addition to tests and questionnaires of known reliability and validity; and (2) by individual examination of non-responders and of children screened out as disturbed or handicapped. Comparisons were then made between children identified as "handicapped" and a random control group of children who had also been studied individually. Individual examinations included psychological and attainment tests, a standard psychiatric interview and neurological examination, a school medical examination with in addition tests of vision and hearing and a wrist X-ray, and an interview with the parents. Unfortunately the control group was chosen only for comparison with intellectually and educationally retarded children. While some information about disturbed children not identified as such by screening devices came from the study of physically handicapped children, no intensive psychiatric study of an adequate control group was done.

(i) Intellectual and educational retardation

2.53 per cent of 8- and 9-yr-old children were intellectually retarded, their score on a shortened form of the W.I.S.C. being two standard deviations or more below the mean of children in the control group. The best screening test was found to be a non-verbal group test which had identified 77 per cent of these children.

Reading retardation, defined as a reading age of 28 months or more below that predicted on the basis of age and I.Q., was present in 33.7 per cent of children. A 2-yr follow up showed no improvement in these retarded readers who clearly had severe and persistent educational handicaps. (Owing to the age of the children in this survey and the criteria used for educational retardation, none of the retarded readers had an I.Q. of under 70.)

Intellectual retardation affected boys and girls equally but reading retardation was much commoner in boys and the sex ratio was higher than for cerebral palsy and perinatal complications which in any case had affected only a minority of retarded readers. Although cultural pressures (such as women teachers' bias against boys and the greater emphasis placed on academic success in boys) may play a part, the authors consider that the excess of boys among retarded readers reflect a biological, perhaps genetic, mechanism which also contributes to the preponderance of boys with other specific developmental disorders, for example, of language or of bowel and bladder control. Retarded readers tended to come from very large families and often had a family history of educational failure. They were more often youngest than oldest children in a sibship and their educational retarda-

tion, associated as it was with language deficits rather than with perceptual and manual handicaps, was thought to reflect also inadequate opportunities for language learning during the pre-school years.

Exploration of the physical correlates of intellectual and educational retardation revealed the unreliability of ordinary school medical examinations especially for minor health defects but even, although less so, for the relatively objective estimates of height and weight. An interesting finding was that overt squint was present in 15 per cent of intellectually retarded children compared with 1 per cent among the controls.

Intellectually retarded children, especially those with severe subnormality, had high rates of psychiatric disorder.

The school placement of intellectually retarded children reflected accurately their level of achievement and physical handicap and was not much influenced by social class factors or the presence of psychiatric disorder. In contrast, children retarded in reading appeared to have been admitted to the very limited number of remedial classes available on the basis of their disturbed behaviour rather than the degree of their educational handicap.

(ii) *Psychiatric disorder*

The Parent and Teacher questionnaires, devised as screening instruments for the study, have already been extremely useful to other research workers (e.g. Wolff and Olatawura, 1971). The merit of these questionnaires lies in their simplicity and their known reliability and validity. A remarkable feature is their complete avoidance of any note of censoriousness.

The final judgement about the presence or absence of psychiatric disorder in the children studied was a "clinical-diagnostic" one, based on all available information, including interviews with child and parent. 6.8 per cent of 10- and 11-yr-old children were psychiatrically disturbed and, reassuring for the clinician, the structured parent interview proved to be the most reliable single measure for identifying the disturbed children. Only 6.8 per thousand children were under psychiatric care.

Children with conduct disorders and with mixed conduct and neurotic disorders shared a number of features. In contrast to children with pure neurotic disorders, they were more often boys, came from large families and were frequently retarded readers.

The association between reading retardation and anti-social behaviour was striking. Of severely retarded readers one-third had anti-social behaviour disorders; over a third of anti-social children were also severely retarded in reading. The three possible causal relationships are explored; (i) does anti-social behaviour lead to reading retardation?, (ii) does reading retardation lead to anti-social behaviour?, or (iii) are both the outcome of a third set of causal factors?

In their biological developmental features (e.g. the presence of developmental language, motor or perceptual defects) and in their language mediating social and family characteristics (e.g. a tendency to come from large families but not from broken homes) children who were both anti-social and retarded in reading resembled non-disturbed retarded readers rather than anti-social children who functioned well at school. (These tended to come from disrupted homes.) The suggestion is that both conditions may develop on the basis of a similar temperamental deviance (e.g. very poor concentration), but also that delinquency may be a maladaptive response to the low self-esteem engendered by educational failure, and that in the absence of effective teaching, psychiatric disturbance and reading disability are mutually reinforcing.

An intriguing finding was the tendency for neurotic children more often to share a bed with another person although they tended to come from small families and were not of lower social class than children in the control group.

Surprisingly, in this comprehensive survey, the illness and treatment experiences of psychiatrically disturbed children were not explored.

The point has been made that in these studies child psychiatric disorder was assessed clinically. It was not, as in the Buckinghamshire survey (Shepherd *et al.*, 1971), equated with symptom "deviance". Shepherd and his colleagues found that some children in the community have symptoms equivalent to those of child guidance clinic attenders. The Buckinghamshire research team over-looked the social and educational disabilities of disturbed children, their distress and that of their families and the community in which they live. In this way the suggestion is conveyed that perhaps there is no such thing as psychiatric illness in childhood. The Isle of Wight studies in contrast give a

clear and detailed picture of the nature and implications of child psychiatric disorder. It is the more surprising that throughout the book the concept of "handicap" is used in relation to psychiatric disorder. This lends an air of unreality to certain passages in the book and inevitably conveys the notion of some fixed impairment of structure or function to which the child and his family must be helped to adapt.

Despite a footnote on page 148 explaining that "The term handicap is used here in the broad sense of any disability which impedes the child in some way in his daily life . . .", this is not how the term is usually understood. Moreover in chapters 16 and 21 the authors themselves discuss the "handicap" of psychiatrically disturbed children as if it were indeed something the child "has" and from which he and his family "suffer". The disorganization and impaired social relationships of the families of disturbed children are treated as consequences of the child's condition just as they are in the physically handicapped group.

The fact that the child's disturbance is often an expression of poor family functioning is here almost entirely ignored. Again on page 271 in the chapter on treatment of children with psychiatric disorders the following sentence occurs: "It is right and proper that children with chronic and incurable disorders as well as those with acute and remediable conditions should have available skilled help in the management of their problems so that the development of secondary handicaps may be prevented and so that the children may be helped to develop as well as their psychiatric disability allows". The fact that very often when parents themselves are treated psychiatrically or teachers helped to modify the demands they make of children, the child's disorder disappears, is not even hinted at.

It may be that by equating child psychiatric disorder with "handicap", disturbed children and the professional people who look after them will seem less strange and become more acceptable to teachers and school medical officers, accustomed as these are to identify and make special allowances for physically and mentally impaired children. The concept "handicap", however, makes no demands on non-psychiatrists to develop an increased understanding of interpersonal processes or to learn interpersonal skills. Without these teachers and doctors will continue to "distance" themselves emotionally from disturbed children. The concept of handicap may indeed strengthen the defensiveness of non-psychiatrists, leading them to regard disturbed children as in some basic way abnormal, and may thus counter the more optimistic and therapeutically effective view of behaviour symptoms as normal reaction patterns.

The dilemma, not yet resolved, is how to convey that psychiatrically disturbed children need professional care, while at the same time their behaviour disorders are usually "normal" reactions to stressful life experiences on the one hand and constitutional handicaps (physical, intellectual or temperamental) on the other.

(iii) *Physical disorder*

5.7 per cent of 10- to 12-yr-old children were identified as having a chronic physical disorder. Asthma (affecting 2.3 per cent) was the commonest. All sub-groups of physically handicapped children had an excess of reading disability (27 per cent in children with physical disorders affecting the brain; 14 per cent in children with other physical disorders including asthma). In children without brain disease, whose intelligence was found to be the same as that of children in the control group, reading retardation was related to repeated short absences from school. As reported in previous publications (Graham *et al.*, 1968; Rutter *et al.*, 1970) children with disorders affecting the brain had three to four times as much psychiatric disorder as children in the general population, and children with asthma or with other chronic physical disorders twice as much.

Conclusions

The concluding chapters underline the salient findings, for example the degree of overlap between "handicapping" conditions. Associated handicaps were found in 90 per cent of intellectually retarded children; in 43 per cent of retarded readers; in 36 per cent of children with psychiatric disorders; and in 29 per cent of the physically handicapped. The main deficiencies of services were for the educationally retarded and the psychiatrically disturbed children, and for the social, educational and psychiatric aspects of children with physical handicaps.

Several important experimental projects were set up to evaluate changes in services: for example,

the effect of different types of remedial teaching on the progress of retarded readers and the effect of short in-service training courses for teachers of 8-yr-olds. The point is made that in evaluating the effect of different types of education on children, the actual teaching techniques used must also be monitored. Handicaps and psychiatric disorders in childhood are common and all teachers in training should be taught how to recognize and teach children with special needs. At present little emphasis is placed in teacher training colleges on helping teachers to acquire specific classroom skills (Morrison *et al.*, 1971).

A second group of experimental service studies relate to the functions of the school medical officer. Traditional school medical examinations yield little useful information. The suggestion is made that school doctors should be trained to carry out developmental assessments which may be more helpful in identifying at the time of school entry children at risk of developing learning difficulties.

Other important issues raised are the need for evaluating nursery programmes for socially and biologically handicapped children and the false distinction between educational and clinical child psychologists.

These studies were launched at a time at which unemployment rates were low, the Welfare State was a reality and the indications were that services for children would indeed be developed in accordance with established needs. The Isle of Wight surveys have clarified the medical, psychiatric and educational needs of school children. We must hope that our politicians and administrators at all levels will take note of the findings. The book should be widely read by child psychiatrists, school doctors, paediatricians, educational and clinical psychologists and by those who teach teachers and social workers.

SULA WOLFF

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FILM REVIEW

Young Children in Brief Separation—4: Thomas, 2 Years 4 Months, in foster care for 10 days. Produced by JAMES and JOYCE ROBERTSON.

THIS is the fourth film in the series by James and Joyce Robertson on normal children placed in foster homes for short periods (see previous reviews in *J. Child Psychol. Psychiat.* 9 (1 & 2) (1968) and 10 (4) (1969).

Thomas is placed with Mr. and Mrs. Robertson while his mother is in hospital for the birth of a second child. The separation from parents and home is explained to him before it occurs and he visits the foster family beforehand. During the mother's confinement the father visits him daily.

Throughout the period of separation, Thomas is filmed in a variety of domestic situations and the film draws particular attention to the apparent conflict he suffers in needing and receiving the foster mother's care and affection while still having an attachment to his own mother—hence the subtitle "A Conflict of Loyalties". Thomas vacillates from accepting to ignoring and physically opposing the foster mother's approaches. Father's daily visits give him pleasure but their termination causes upset although this is reported as short-lived. Mother's arrival at the end of 10 days' absence is met momentarily with no explicit response but quickly full attention is given to her and the foster parents, relatively if not absolutely speaking, are ignored.

Thomas completes an extremely useful quartet of films on the responses to short-term foster-care of normal children from normal homes. One hopes that more information on their subsequent adjustment will be published. Inevitably, the films have some overlap with each other, although the problems presented vary, but any of them provides sufficient material guaranteed to elicit discussion in any professional group concerned with the care of children. However, discussion will need to be carefully conducted if "cognition" and "affect" are not to be placed in unprofitable conflict! Inevitably, both field and research workers will want more information than any film can reasonably be expected to provide (e.g. the question of sex differences in adjustment would be particularly interesting). At the same time, the professional person, in viewing these films, can hardly fail to become more sensitized to the issues so graphically presented. Whatever the limitations of filmed extracts, such reactions, properly utilized, must be of increased value to the welfare of children in the long term, irrespective of their capability to stimulate further research.

In this particular film, direct verbalizations from the child and adults are recorded and this adds to the film's impact. An additional point raised by the film in the reviewer's mind was the role of the foster parents' teenage daughter in assisting Thomas at times of distress and conflict. On several occasions, the visual record certainly suggests he would readily accept support and comfort from her while opposing overtures from the foster mother. A generalization that the daughter was less involved in the intra-family complex may be an oversimplification. The contribution of siblings, even foster-siblings, to therapy or supportive treatment, perhaps merits more extensive attention.

R. MALIPHANT

The film is in black and white, 16 mm, sound, 38 min duration. Available from Concord Films Council, Nacton, Ipswich, Suffolk (0473 76012) or New York University Library, 26 Washington Place, New York 10003, U.S.A.

BOOK REVIEWS

Specific Reading Disability: Advances in Theory and Method. Ed. DIRK J. BAKKER and PAUL SATZ. Rotterdam University Press, Rotterdam, 1970, pp. xii + 166. No price stated.

THIS BOOK consists of seven papers presented in a Symposium on Reading Disability at the International Congress of Applied Psychology held in Amsterdam in 1968; together with a valuable review of the papers, written subsequently by Dr. Otfried Spreen. The papers relate to specific developmental dyslexia, the accepted definition of which is that quoted by Critchley: "A difficulty in learning to read, which is constitutional, often genetically determined, and which is unassociated with general intellectual retardation, primary emotional instability, or gross physical defects".

There is considerable theoretical speculation, accompanied by supporting evidence, as to the neurological basis of dyslexia, which Satz and Sparrow consider to be related to a gradually developing hierarchical organization of lateralized functions in the major hemisphere. Now the earliest stages, of the movements and sensori-motor functions involved in simple hand preference and skill, may show normal lateralization by school age. Thus Annett found that there is little difference in the distribution of right, left and mixed handedness from the age of five upwards. But lateralization of language functions may develop more gradually. Annett also showed that performance on a Vocabulary test was poorer in those with mixed handedness than in the right and left-handed at ages from 5 to 15 years.

Several authors point out that there is evidence for delay in the maturation in dyslexics of a variety of linguistic functions which might be associated with incomplete lateralization of these. Thus Fry *et al.* found the oral language of backward readers of 7-8 years to be more primitive and less highly developed than that of normal readers (this regardless of social class). Older dyslexics were shown by Sparrow and Satz to be inferior in the complex partially linguistic processes involved in lateral awareness, finger differentiation and differential recall of digits presented to the right and left ears. Bakker found an inferiority in recall of sequential order of meaningful visual material; and also in the sequential ordering of letters and words by younger backward readers.

Now if indeed a maturational lag in cerebral lateralization is responsible for these disorders, one might expect that the lag would be overcome with increasing age and the disorders disappear. There does indeed appear to be some improvement in lateral awareness and sequential ordering with increase in age. But such evidence as there is suggests that the reading disability of dyslexics, still more the spelling disability, is rarely completely overcome, even by remedial teaching. And in this connection it is interesting to note the finding of Van Meel *et al.* that the difference between backward and normal readers in ability to analyse complex visual forms increased with age; the backward readers ceased to improve, whereas the normal readers continued to do so.

Several authors appear to believe that dyslexia has a genetic basis, which supports the possibility of a permanent disability. Annett suggests, from her findings on distribution of handedness and from findings on speech lateralization in brain damaged children, that there is a genetic basis for laterality; but that though handedness and speech lateralization are associated, they are not identical in origin.

It would perhaps be ungracious to cavil at the omission, in a collection of papers by different authors, of certain important aspects of dyslexia. But Spreen noted these omissions; and these aspects must be covered by any definitive theory as to the nature and causes of dyslexia. No consideration is given as to the possible failure in integration of the functions of the minor hemisphere, as apparent perhaps in difficulties in comprehending grapheme-phoneme correspondence. Though some authors comment on the importance of temporal sequential order, they do not consider the cross-modal matching of visual spatial and temporal linguistic order, which has been shown to be inadequately performed by dyslexics. Finally, specific developmental dyslexia seems to be viewed as a unitary disorder, whereas it is clear from clinical studies that different cases vary in their symptoms, and may even constitute different types of disorder.

However, in spite of such shortcomings, all those interested in specific developmental dyslexia will welcome this book and find much of value in it.

M. D. VERNON

Children of Mentally Ill Parents: Problems in Child Care. ELIZABETH P. RICE, MIRIAM C. EKDAHL and LEO MILLER. Behavioral Publications, New York, 1971, pp. xv + 269. No price stated.

THIS BOOK by Harvard social workers reports the results of three consecutive studies, from 1959 to 1967, of the impact of parental mental illness on children.

In the first study families in which one parent had been admitted to a mental hospital during a given period were compared with families in which one parent had been admitted for tuberculosis. In the second study the families of mental hospital patients were divided into two geographically distinct groups in only one of which the local community health and social agencies provided special care. In the final study of families where the mother had attended emergency psychiatric services, social workers worked intensively with a randomly selected group.

The authors' primary concern is with the quality of child care. They question the idea that a child's home is always better than a foster home or institution, and give some dramatic examples of the experiences of children with a mentally ill parent. Unfortunately, although some attempt was made to measure psychiatric disturbance in the children, the disturbance is not systematically related to the nature of the care the children received. It is merely assumed that certain areas of care are the most relevant. Changes in these areas are then related to the effects of intervention by health and social services. The authors rightly point out that long-term effects on children are not assessed in these investigations.

There is a striking lack of attempts to evaluate the results statistically and the review of the literature ignores several major studies which are directly relevant, for instance Rutter's 'Children of Sick Parents'.

A grim picture is presented of the failure of psychiatric and social services. For instance, there was a tendency for services to discontinue contact with families when immediate needs had been met or there was difficulty in working with the family. The authors are concerned about the importance of child care in relationship to future psychiatric morbidity and they conclude with some useful recommendations about how psychiatric and social services might alter their mode of action. It is clear that radical changes are required if preventive psychiatry is to become a reality.

This book and the research which it describes cover an important area and raise vital questions, but the authors' approach to their research and the analysis of their findings is disappointing.

A. D. Cox

REFERENCE

RUTTER, M. L. (1966) *Children of Sick Parents*. Maudsley Monograph 10. O.U.P., London.

The Educational Needs of Severely Subnormal Children. MILDRED STEVENS. Edward Arnold, London, 1971, pp. xii + 118. £1.85.

IN THIS book, Mrs. Stevens has presented an approach to teaching severely sub-normal children based on a knowledge of child development and its application to individual children. She writes for two groups of people: those involved in education on a day-to-day basis, and those involved at an organization and teacher training level. The aims of the book are therefore practical. Throughout there are examples of lists of activities, ways of organizing classrooms and timetables, suggestions for programmes and techniques for assessing them.

Mrs. Stevens makes, at the beginning of the book, the point that a teacher of severely sub-normal children should consider each individually, in terms of his skills and particular difficulties. This is an ongoing diagnostic process, since emphasis is placed on the progress of these children through the normal child development stages, albeit at a slower rate. The need for observations and record keeping is discussed at several points in the book, though the examples given are more subjective and less systematic than would be acceptable for any firm conclusions.

The general approach to teaching given is one of maximizing the child's use of his school (and

out of school) environment by providing many opportunities for "creative" play while at the same time ensuring a proportion of time is given to systematic individual teaching sessions. In emphasizing the uses of responding to the interests shown by the child, and increasing his freedom of movement and activities within the school situation, Mrs. Stevens underweights the part of the book devoted to individual teaching sessions. She provides extensive, useful lists of activities and materials for developing children's manipulative skills and play activities, but little practical help for more structured individual teaching. There is, however, a useful section on techniques for assessing a child's educational needs on the basis of tests devised by the teacher where an educational psychologist is unavailable for extensive diagnostic assessment work. Used in relation to graded work programmes, the tests suggested would pin-point areas of specific disability.

The extensive discussion on play activities is useful in relating these to the individual child's development socially, linguistically, and in sensorimotor skills, but sometimes is over-definite in stating what in fact are unsystematic observations or unsupported conclusions.

Apart from an appendix of activities, Mrs. Stevens makes no mention of children in special care units (either severely physically handicapped children, or those with extensive behaviour problems). While forming only a small part of the junior training school population, these children often constitute the biggest headaches to those teaching them. Neither does she discuss management of behaviour problems within the classroom in general (surely part of a child's educational needs). These two omissions affect the usefulness of what is otherwise a practical little book.

JUDITH JENKINS

Student Casualties. ANTHONY RYLE. Allen Lane, the Penguin Press, 1969, pp. xiv + 152.
£1.50

THIS contribution to student health literature outdistances other publications because, for the first time, it indicates to the reader why the practice of student health is so specialized. Dr. Ryle places student health problems within the field of adolescent psychiatry, emphasizing the psycho-dynamics of late adolescence and incorporating within its leaves new aspects in the area of community health. In student health work a practitioner deals with a wide range of problems ranging from psychological disturbances, early recognition of psychosis and neurosis, psychosomatic medicine, and character difficulties to acting-out behaviour, i.e. pregnancy, drug usage and suicide. All are dealt with comprehensively. However, specific university problems such as examination anxiety, study block, failure and drop-out are underlined so that this area of great importance to pedagogues, paediatricians and child psychiatrists can be understood in depth. Dr. Ryle has written a particularly good chapter on student protests and politics.

His framework is a psycho-dynamic one with excellent case descriptions, although he tends to over-simplify the complexities of intra-psychic influences. His research findings using the repertory grid methods of psychological assessment should find an audience from anyone interested in psycho-therapeutic techniques.

Dr. Ryle must be congratulated on writing an excellent book which is a must for anyone involved in dealing with the adolescent group in higher education as well as being informative for therapists who want to increase their awareness of the difficulties of adolescents under stress.

ARNOLD LINKEN

Emotional Problems of the Student. (2nd Edition). Edited by GRAHAM B. BLAINE, JR. and CHARLES C. McARTHUR. Butterworths, London, 1971, pp. xxx + 388. No price stated.

THIS BOOK by sixteen psychiatrists and psychologists at Harvard covers the whole field of student mental health, with chapters on the roles of the psychiatrist, psychologist and faculty counsellor; psychiatric illness, suicide and drug use; study problems, including reading and language difficulties; the special problems of women students, medical students and graduate students from both home and abroad (including those at the highly competitive School of Business Administration); and the reasons for student unrest in the States. Felicitously it has an introduction by Erik Erikson, which underlines the value of the psychotherapeutic approach pursued throughout the book towards this emotionally vulnerable yet therapeutically rewarding age group.

It is not easy to compare their findings with those in this country; partly because University life in the States is different in so many ways from ours, and partly because it is difficult for anyone unfamiliar with the structure and working of the Student Health Service there to understand them fully from the book. For instance, it is not clear whether there is a separate Counselling Service at Harvard, nor how close a liaison there is with the physicians. The psychiatrists seem more paternalistic and more a part of the Establishment than in this country, and very much more numerous, fulfilling part of the role that Student Health Physicians play here. One notices throughout the book that the grade system makes every student and teacher continuously aware of any failure in performance so that study problems are the most usual presentation.

The writing contains much wisdom, commonsense and humour, and is illustrated by many case histories. However, it does not give a full account either of psychotherapy in this age group or of student mental health. Only certain chapters give references; accounts of research are sometimes ambiguous and not clearly set out (nowhere are the figures for the total student population at Harvard given); there is no mention of contraception or of the management of unwanted pregnancies, of attempted suicide, or of psychosexual problems other than male homosexuality; and while perhaps understandably there is no mention of behaviour therapy, more surprisingly there is little emphasis on group therapy.

There is an interesting account of a syndrome they call "student apathy" and there is some useful information on graduate student illness and on drop-outs, including a battery of psychological tests to determine suitability for readmission.

Although this book must necessarily have a limited appeal in this country it will certainly be of interest to student health physicians, psychologists, teachers and therapists dealing with late adolescence in an academic setting.

ZAIDA HALL

Mental Illness in Childhood: A Study of Residential Treatment. V. L. KAHAN. Tavistock Publications, London, 1971, pp. ix + 219. £3.00 (hardback).

THIS BOOK describes the life work of Dr. Kahan and his colleagues at West Stowell House, an inpatient Unit for severely disturbed children, mainly in the subnormal and severely subnormal category.

Although the work purports to be a research study of residential treatment, this section of the book was very disappointing. The research design has resulted in tautology: the patients have been placed in different diagnoses according to their clinical state as seen by the author, their symptoms and signs are then tabulated against the diagnostic categories. It will be seen, therefore, that the tables merely reflect the author's personal view of the characteristics of his preferred diagnostic groupings. The section on causal factors is marred by the same defect and by the absence of any form of control groups. It is unfortunate therefore, that no conclusions about the biology, aetiology or nature of child psychosis can be drawn.

The reader may find the greatest interest in the description of the author's approach to assessment and treatment of the children, enlivened by case material. The reviewer would have liked to have seen a greater part of the book devoted to this subject. A large part of the book consists of case

histories which certainly illustrate the tremendous problems which the author and his staff have to overcome to achieve even the smallest gains. His treatment approach is based on what the author calls "Child-centred Intensive Care"—"the provision of infant nurture, affection, tolerance and structure". The second plank in treatment the author calls "Regressed nurtural care", in which the child seems to be encouraged to form contacts with staff members at a very infantile level, relationships being built up through nappy changing, washing, bottle feeding, etc. While showing a considerable degree of sympathy and understanding for the needs of young children, these caring procedures seem to be designed to lead to dependence and institutionalization. The description of the educational measures used seem not very different from those used in most modern primary schools and schools for the educationally subnormal. With these reservations the chapters on treatment should be read by anyone working in the residential care of children, particularly the severely handicapped.

It is impossible to assess the report of the children's response to treatment, because of lack of control groups, but one can only admire the achievement of any success at all with such severely handicapped children.

CHRISTOPHER WARDLE

Counselling of Parents of the Mentally Retarded. (1st Edition). Ed. R. L. NOLAND. Charles C. Thomas, Springfield, Illinois, 1970, pp. xxxi + 400. No price stated.

THIS "sourcebook" at first appeared to be a long-winded, repetitive way of making a few points. There seemed to be excessive emphasis on parents' emotional reactions to having a retarded child, with too little about counselling parents in practical handling and management of their children. There was too much on meeting the initial crisis, and little on the important subsequent crises in life. It was necessary to read the whole book to discover that a number of aspects and points of view are in fact covered.

Recurring themes include the importance of good and sensitive individual counselling, especially early on in the child's life. Chapter seven, by I. Zwerling, is an excellent article for anyone involved in interviewing the parents of mentally handicapped people. He points out the value of using the parents' own assessment of their child in helping them to understand his behaviour and level of development. I found one of the chapters on genetic counselling informative. Another common theme is the value of group-discussion for parents. The chapter by J. C. Coleman describes twice-weekly groups that helped in co-ordination between parents and institution, as well as in developing parental understanding and healthier attitudes to the problems of rearing mentally handicapped children. The need for "concrete practical guidance" is frequently mentioned but details of this are seldom specified. There is at least one plea for emphasis in counselling on what the child can do rather than the negative aspects.

It is repeatedly stated that, contrary to the assumptions of many professionals, parents have not been found to necessarily prefer institutional to home care. Attitudes to institutionalization are affected by the quality of information parents receive about their child and about the resources available. The need is expressed for better integration of the handicapped in society, and tribute is paid to the politically, socially, and emotionally supportive role of Parents' Societies.

The problem is selecting what to read for oneself. However, at least the print is large and there are summaries at the ends of many chapters.

ANN KERKHAM

Loss and Grief: Psychological Management in Medical Practice. Edited by B. SCHENBERY, A. C. CARR, D. PERETZ, and A. H. KUTSCHER. Columbia University Press New York and London, 1970, pp. xi + 398. \$12.50.

THE SUCCESS of preventative public health measures, greatly improved obstetric and perinatal care, chemotherapy and other medical and surgical therapeutic techniques has lead to a considerable change of emphasis in medicine. Personnel and time have been released to consider more actively the chronic handicapping disorders and their psychological and social implications. Greater interest can now be afforded the quality of life of those with physical or mental illhealth and their families.

As a consequence, psychiatrists and social workers are likely to be asked more often to participate or advise in the care of those with loss of bodily functions, threatened loss of life and those who have been bereaved. This book provides a theoretical and practical guide for any workers in the field.

There are five chapters specifically about death in relation to children. Four experienced authors deal with the child's concept of death, his reaction to his own terminal illness, the child's reaction to death of another family member, and the responses of the family and medical personnel to fatal illness in a child. All these chapters not only review the work of others but clearly are also written from the standpoint of practical experience, and each provides a list of references which together make up a comprehensive reading list. The book also contains a selected collection of briefly annotated key papers on loss and grief.

The section on children, and the three useful introductory chapters on basic psychological concepts concerning loss and grief, together form a third of the book and make it particularly valuable for those working with children and their families. Although a further section dealing with various aspects of the care of dying patients concerns adults mainly, many of the topics covered are also relevant to child patients, particularly family reactions to the terminal illness and to their bereavement.

The concept of loss can be extended to cover many illness experiences which involve temporary or permanent handicap. This is a wide subject which is however contained and made assimilable by the unifying theme of partial loss. Consequently, although individual authors only cover the area of their own special expertise (such as blindness, deafness or amputation, etc.), the general principles of management of partial loss are brought out well.

The general section on various ideas about loss and grief could have been interestingly expanded by the addition of a chapter comparing cultural differences in attitudes to loss and grief reactions. Brief references to cultural differences are made in the chapter on the philosophical and religious concern with death, but if readers have a particular interest in these aspects of the subject they will need to turn to other sources, and references in this section are general with few specific suggestions for further reading except in the ethologist's short chapter on grief.

This is essentially a practising clinician's book. Whether the practitioner is a general physician, paediatrician, family doctor, social worker or psychiatrist, the ideas and experience set out here will help to extend his skills in understanding and providing care for those suffering loss and grief.

ROY HOWARTH

Non-Communicating Children. L. MINSKI and MARGARET J. SHEPPERD. Appleton-Century-Crofts, New York, 1971, pp. xiii + 188. \$7.95.

THIS little book is an interesting account of the 474 non-communicating children who passed through the children's units pioneered by Minski at Belmont Hospital between 1953 and 1967. The humane, practical approach of the authors repeatedly shows itself in their readable descriptions of their units and the children in the series.

Over 50 per cent were of subnormal intelligence and the rest were psychotic, emotionally disturbed, deaf, brain-damaged, or aphasic. Separate chapters are devoted to descriptions of each of these groups, and a number of short anecdotal case histories are given to exemplify them. It is unfortunate that in a book dealing with such a potentially valuable series of cases, the majority of which were

found to be of subnormal intelligence, so little detail is given of tests used. The two tests quoted in Bowley's chapter on psychological testing are known to yield widely differing scores on the same children and it is not always clear from the authors' clinical descriptions what the children were actually like.

In a number of places assumptions unwarranted by the data presented have evidently crept in. For example, the authors use the term 'neurotic heredity' where they present numbers of parents of anxious or irritable disposition. This sort of thinking seems to imply parental causation of the child's disorder and the data presented simply do not warrant such a conclusion whether it is true or not.

The final chapters on psychological testing, speech therapy, special educational methods, and operant speech training by Bowley, Taylor and Evans, though short, are detailed, concise and practical and should be informative for professionals with little experience of such children who want to know *what to do now*.

These chapters, together with the principal authors' timely comments about the need both for more research and for more provision for children with multiple handicaps (e.g. subnormal and deaf), are of considerable interest and the book as a whole is a useful addition to the field.

LAWRENCE BARTAK

The Growth and Development of Children. CATHERINE LEE. Longmans, Green & Co. Ltd., London & Harlow, 1969, pp. vii + 196. 90p.

THIS book is described on the jacket as specially written to meet the needs of the untrained non-teaching staff who work with young children in such capacities as nursery nurse, playgroup leader or teachers' aide. It provides a clear and lucidly written guide to the early development and helpful management of a normal child, which would be of use not only to students, but as a refresher to professionally trained staff in any child care orientated setting. It should certainly be on the book list of social work training courses, and would help experienced infant teachers and residential staff by clarifying for them objectively, what they often feel they have only time to do instinctively.

The author covers the early stages of physical development in a straightforward descriptive fashion, illustrated with observations of infant social behaviour; and includes a continuous narrative of the child's probable thoughts, feelings and fantasies in the various development stages. While she draws on psychoanalytic theory in her account of the very young child, she never loses sight of the interactionist perspective, and emphasizes throughout how behaviour and successful growth depend not only on the child's earliest experiences, but on the way these are reinforced by the current behaviour of the adults with whom he finds himself.

The book includes two valuable chapters on the value of play in learning, with specific advice on appropriate play materials and group activities. The forms of social and anti-social behaviour normally observed in infant groups are described in detail; and their possible causation within the home and handling within the group are sympathetically considered. While the author emphasizes the importance of specialist advice for marked disturbance she understands and explains the potential sources of disturbed behaviour within both child and caring adult, and the practical advice she gives in the book would do much to minimize this.

GILL GORELL BARNES

Father, Child, and Sex Role. HENRY B. BILLER. Heath Lexington Books, Lexington, Massachusetts, 1971, pp. xi + 193. No price stated.

THIS BOOK performs a very useful function in drawing together a large body of research literature relating to the father's influence on his children's personality development. The author focusses predominantly on the father-son relationship as it affects the son's sex-role. But there are also chapters about the effect of fathers on the formation of other facets of male and female personality. The mother-son relationship is discussed *vis-à-vis* the father-son relationship with particular reference to father absence.

Dr. Biller has himself contributed a considerable amount of research related to children's sex-role. Although the literature which he reviews is diverse and conceptually complex, he is successful in ordering and clarifying many of the issues. However, he has some tendency to state hypotheses as though they were established facts.

Three aspects of sex-role development are distinguished: sex-role orientation, sex-role preference, and sex-role adoption. These conceptions fit into a theoretical framework but in practice are defined by the way in which they are measured. In consequence a more thorough discussion of the modes of measurement would have been appropriate. Much of the experimental work which is described is concerned with the connection between current paternal factors and current child behaviour. There appears to be relatively little known about how father-son interactions predict a child's future sex-role behaviour.

Dr. Biller is clearly concerned with what he sees as a widespread failure of fathers to interact sufficiently with their children. There is frequent mention of absent fathers, but it is only when discussing the mother-son relationship and the development of daughters that there is mention that physical separation from fathers may not be so important as the causes of the separation and other associated factors. The need to think about mother-child separation more clearly and precisely has already been demonstrated; and there seems no reason to think that this is any the less necessary where father-child separation is concerned.

In emphasizing the importance of the father-child relationship Dr. Biller says very little about the influence of interparental attitudes and behaviour. Clearly the scope of a book must be limited in some way but father-child interactions need to be looked at in relationship to other interactions in the family.

This book is a helpful source of references to studies of the father-child relationship but the author's speculations have some limitations.

A. D. Cox

Stress in Youth. A Five-Year Study of the Psychiatric Treatment, Schooling and Care of 150 Adolescents. MARY CAPES, ELIZABETH GOULD and MOLLY TOWNSEND. Nuffield Provincial Hospitals Trust, Oxford University Press, London, 1971, pp. xii + 103. 75p.

It is realized today that wide ranging provisions in the mental health, educational and child care fields are required to meet appropriately the varying needs of young adolescents. The question is, what kinds of provisions in any area are most efficacious for those who can be regarded as psychiatrically ill, emotionally disturbed or maladjusted, and on what scale are they needed?

Stress in Youth is a readable factual survey of such a group of 153 youngsters, aged 12 or 13 years at the start, selected from amongst those using the services provided in the Wessex Region. These services are described and while this is a well-endowed Region, the gaps still to be filled are indicated. The surveyors were a Psychiatrist, Psychologist, and a Sociologist working as a team and who reviewed the progress of the group yearly over a period of four years. The problems that these children presented may be familiar to those who work with adolescents; some lived in their own homes and others were in the care of the Children's Department. Most were under psychiatric care in Child Guidance Clinics or sometimes as in-patients; some were in day or boarding schools for the maladjusted. A few were

sent to approved schools. Predictions of their likely progress were attempted at the start and not surprisingly erred towards being somewhat too pessimistic, except for a hard core of the very disturbed who did not do well. No attempt was made to assess this material statistically; the numbers involved could hardly allow this, but occasional conclusions were inferred perhaps which required caution because of this lack. A useful but not exhaustive bibliography is included but not discussed.

There were limitations inherent in such a survey as this, but there is a dearth of information available on these matters to help planners, and so what it offers is valuable. Some insight can be gained from reading it both into the variety of problems these sorts of youngsters present and into the limitations of what has been done to try and deal with them so far.

W. WARREN

Group Work with Parents in Special Circumstances. JESSIE PARFIT. National Children's Bureau, London, 1971, pp. 152. £1.25.

IT FREQUENTLY happens that a patient claims to have benefited from treatment simply by understanding more about his mental processes than before. It then behoves the therapist to ask how he is putting this into effect in his everyday life. Similarly with books; there are many which aim at helping the reader to gain a theoretical understanding of a method of working and then it is necessary to ask where can this idea be seen to be in operation.

This book has been compiled from the actual experiences of group work with parents in special circumstances. There are five sections dealing successively with adoptive parents, foster parents, parents of handicapped or chronically ill children, and next there is a section which deals with efforts to help groups of socially disadvantaged parents, including unsupported mothers; and, finally, there are reports of groups for parents of delinquent, deprived or disturbed children.

Various local authority organizations and hospital services have replied to the enquiries of the author, and the literature has been combed for the recordings of pioneer projects on these subjects. Roughly speaking, there is one report per page.

It is of immense assistance to know who does what and where and, as most of the sources are in the United Kingdom, it is possible for the reader to follow up and make personal enquiries from the initiator of any scheme which has special interest. One should be grateful to Dr. Parfit for providing so much valuable information in accessible form and small space.

J. H. KAHN

family interaction, social adjustment, school children

TON, P. JEAN and DOBSON, GILLIAN. Family interaction and social adjustment in a sample of normal school children. *J. Child Psychol. Psychiat.* **13**, 77-89 (1972).

Summary—Twenty-five children aged 10-11, none of whom had been psychiatrically assessed as "disturbed", were rated for their social behaviour at school. Nine with no signs of disturbance were termed the "Adjusted" group, 8 with one or two signs the "Middle" group, and 8 with four or more signs the "Disturbed" group. Significant differences were found between the "Adjusted" and "Disturbed" groups for parental verbal behaviour during a family discussion task, "Disturbed" mothers being comparatively over-prominent and over-attentive to their children, "Disturbed" fathers being withdrawn. Overt behaviour appeared to reflect mild underlying emotional disturbances within the "Disturbed" and "Middle" groups.

childhood predictors of adult psychiatric illness

ELLISOP, GRAHAM W. (1972) Psychiatric patients seen as children and adults: childhood predictors of adult illness. *J. Child Psychol. Psychiat.* **13**, 91-101.

Summary—Of the 3370 children referred to the Department of Psychiatry, Royal Children's Hospital, Melbourne, during the decade 1 January 1945 to 31 December 1954 and who were born prior to 1946, 12 per cent were, as adults, patients of the Victorian Mental Health Department between June 1961 and June 1969. This represents a fourfold increase in expected rate. When the mentally subnormal were excluded from consideration the rate was $3\frac{1}{2}$ times greater than expected. Of the non subnormal diagnostic groups, male personality disorders had the worst prognosis. Comparing the children on such variables as reason for referral, behaviour complained of, age at onset of symptoms, age at presentation, duration of symptoms, social class and amount of treatment, little of predictive value emerged.

severe deprivation

CLARKE, A. D. B. (1972) Commentary on Koluchová's "Severe deprivation in twins: a case study." *J. Child Psychol. Psychiat.* **13**, 103-106.

Summary—Koluchová's on-going study of twin boys who suffered extreme deprivation between 18 months and 7 yr, and who thereafter received remedial treatment, is discussed in the context of relevant literature. Malnutrition, cruelty, neglect and considerable isolation over $5\frac{1}{2}$ yr did not predestine them permanently to a condition of severe subnormality which they manifested on discovery. Their greatly accelerated development confirms similar work and sheds some light on the interaction of constitutional and environmental factors in the formation of human characteristics. Results underline the inadequacy of theories stressing the over-riding importance of early experiences for later growth.

severe deprivation

KOLUCHOVÁ, JARMILA (1972) Severe deprivation in twins: a case study. *J. Child Psychol. Psychiat.* **13**, 107-114.

Summary—The author reports an unusual case of deprivation. Monozygotic twin boys were reared from age 18 months to 7 yr in social isolation by a psychopathic stepmother and an inadequate father. On discovery, their mental age level was 3 yr but after treatment, a period in a children's home and approximately 2 yr in a foster-home, they had made remarkable progress and now appear about average for their age. Forensic aspects of the case are discussed, as are features of the foster-home placement, and the significance of twinning in the recovery. Residual effects of deprivation will be studied by an extended follow-up.

effects of administration conditions,
personality scores in children

D. K. B. (1972) A note on the effects of administration conditions upon personality scores in children. *J. Child Psychol. Psychiat.* **13**, 115-119.

Summary—This paper raises the problem of respondent anonymity in test administration. A total of 380 children, aged 11 and 12 years, were given a revised version of the junior Eysenck Personality Inventory that includes a psychoticism scale. An administration condition of anonymity was compared with one in which children were asked to give their names. While the results gave no clear differences between the conditions, the expected differences between boys and girls emerged. The correlations between the scales, and the internal consistency coefficients of the scales, also agreed well with those from other versions of the inventory. It is suggested that under research conditions, children will tend to give honest, or at least consistent, to this type of questionnaire.

creativity, sex differences

L. REENA and HUTT, CORINNE (1972) Divergent thinking in boys and girls. *J. Child Psychol. Psychiat.* **13**, 121-127.

Summary—Despite many findings of consistent sex differences in verbal and non-verbal tests of creativity, there has been no systematic investigation of the performance of girls and boys on tests of creativity. This is particularly puzzling in view of the unequivocal evidence of the female in terms of verbal fluency. A study of the responses of 60 boys and 60 girls, between 7½ and 9½ yr of age on the Wallach-Kogan tests revealed that the girls were higher than the boys on the Fluency measure but not on the Originality measure. The results are interpreted in terms of the differential development of verbal and non-verbal skills in the two sexes and the role of sex differences in the development of verbal and non-verbal skills.

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MATERNAL REJECTION AND CONSERVATION: AN ANALYSIS OF SUB-OPTIMAL COGNITION

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INTRODUCTION

THE RELATIONSHIP between maternal child rearing strategies and the conservation skill depends on contributions from at least three levels or areas of early experience. Firstly, the degree of activation, arousal or sensory stimulation to which an individual has been exposed in infancy. This may have been low in absolute terms, or inappropriately low in different modalities for infants with differentially low activation levels. Secondly, there is the contribution from maternal characteristics and strategies such as emotional warmth and acceptance of the child, autonomy in a setting of encouragement, positive reinforcement and satisfying communication. Inadequacies in cognitive development may arise through sub-optimal stimulation at each of these two levels either through *deficiencies in experience* alone, which would affect the development and integration of progressively more complex schemata, or in conjunction with *affective resistances* in the child which prevent adequate sampling of the environment, or through a combination of these. Thus a variant of "perceptual deprivation", as well as experiences of insecurity and anxiety, may affect the child's cognitive development. In order to sustain specific predictions about the development of conservation, we have to turn to a third level of mother-child interaction. Conservation depends on knowledge of person and object permanence in the absence of immediate experience and/or the presence of misleading or irrelevant cues. If person (mother) permanence not only precedes object permanence, but may adversely affect it (*vide infra*), and if maternal child rearing strategies have their strongest impact at the time when the early logic of conservation is emerging, then an inadequate, unsatisfying and/or stressful mother-child relationship may delay or impair the development of this cognitive operation.

Early conceptualizations of the important and lasting effects of the child's early environment on his later development were inevitably concerned with *gross* interactions between mother-child separation, and personality or character disorders (Bowlby, 1951), or the unfavourable influence of institutionalization on personality development and/or tested intelligence (e.g. Goldfarb, 1945; Skodak and Skeels, 1949). One of the first specific hypotheses linking parental personality and motivation with cognitive characteristics in the child was formulated by Frenkel-Brunswik (1951) with the principle of intolerance of ambiguity, closely followed by the formulations of Witkin (1954) concerning the influence of child rearing variables, such as limitation of activity and excessive control, on individual

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differences in field-dependence. Conceptualizations were beginning to emerge in which the child's cognitive development was seen as substantially influenced by his own need to minimize surprise (except when seeking novelty), conflict and anxiety, and to avoid behaviour which historically had been negatively reinforced, where parental (particularly maternal demands and personality characteristics) functioned in a mediating role. Thus, development may take the form of consistently imposing structure and certainty on ambiguous stimuli because cognitive instability cannot be easily tolerated (Hamilton, 1957), or adaptation to an objective reality may be severely limited, as in the cognitive disorders of the schizophrenias, because of intolerable ambiguities in the communication patterns of the child's home environment (Bateson, 1956).

More recently, specific aspects of the general relationship have been investigated. Bing (1963), examining the maternal correlates of children's discrepant verbal and non-verbal I.Q.s, found that higher verbal ability was linked to demanding, intrusive and anxiety producing mothers. These characteristics usually encourage dependence which has been shown to correlate negatively with Full-Scale I.Q., with inferential and analytic categorization, and with performance on the Children's Embedded Figures Test in 6-year-olds (Pedersen and Wender, 1968). This latter study also confirmed Bing's additional observation of a positive correlation between non-verbal I.Q. and independence training.

The relationship between patterns of parental acceptance/rejection and children's intelligence was also investigated in a study by Hurley (1965), who defined parental acceptance *inter alia* by the absence of coercion, and by encouragement of the child to interact freely with his environment in a context of approval and support. Rejection was defined by parental constriction, disapproval—conveyed partly by intimidation and punishment—and by limitations on exploration. Employing more than one measure of acceptance—rejection, he found a general negative relationship between rejection and I.Q. which was particularly marked for mother-daughter pairs.

Anxiety is one of the most likely states to be generated by parental strategies unacceptable to the child. Intrusiveness, control, and fear of disapproval and rejection, may inhibit a child's independent attempts to master his environment, and he may avoid situations requiring problem solving because he lacks confidence and assurance confirmed by parental approval. It is plausible to predict, therefore, that school performance will be adversely affected in these children. Recent studies confirm that anxiety arising in the mother-child relationship may lead to academic under-achievement, either because of a rejection/dependence conflict, (Weinstein, 1968), or because of anticipation of negative reinforcement (Heilbrun and Waters, 1968). The contention that mother-child interaction in the early stages of development may be crucial for the establishment of fundamental cognitive strategies, is supported by a recent factor-analytic study of mother-infant relationship (Stern *et al.*, 1969), where it is concluded that a causal relationship exists between maternal needs of self-reference, and the response characteristics and developmental progress of the infant.

The influence of maternal needs on the cognitive behaviour of children is further demonstrated by Hess and Shipman (1967) in their distinction between imperative,

subjective-personal and cognitive-rational maternal teaching methods. It was found that the imperative strategy-involving maternal dominance, stressing status and prestige, and discouraging questions from the children, correlated negatively with performance on tasks requiring abstraction and classification. It appeared that interactions between mother and child lacking in clarity and specificity, may determine "non-learning" and avoidance responses.

Much has been written concerning the impairing effect of high anxiety, and of stress, on cognitive efficiency (e.g. Appley and Trumbull, 1967; Wilkinson, 1969; Martin and Stouffe, 1970). Lazarus (1966), discussing alterations in adaptive functioning under conditions of stress, points out that this interaction is very complex and that the outcome must be determined by the nature and the degree of stress, the individual's personality and motivational characteristics, the nature of the task which should show the effect of stress, the type of social interaction between experimenter and subject in an experiment, and the nature of preferred coping mechanisms which are applied to stressful situations. Stress, or anxiety experienced as stress, or stress operationally defined by experimental instruction containing a threat, has been found to impair motor co-ordination, perceptual-motor skills, speech, memory, simple conditioning and complex, conceptual learning. With respect to cognitive efficiency, it is widely held that tasks with stronger and a greater number of competing responses are more impaired by stress (Lazarus, *op. cit.*), that threat increases tendencies to perceptual closure (Moffit and Stagner, 1956; Korchin and Basowitz, 1954), and that anxiety and threat lead to a constriction of perception and limitations in cue utilization (Easterbrook, 1959; Korchin, 1962). Easterbrook has hypothesized that stress impairs performance most in the most demanding types of cognitive tasks which require attention to the largest range and number of cues. By assuming that tension and stress lead to a narrowing of the field of awareness (?narrow-beam, focussed scanning or centration), he predicts that as tension rises not only irrelevant, but relevant cues are excluded from the cognitive processes instigated by the stimulus field. In this event, adaptation becomes impaired, probably because cues indicating danger, pain, rejection or failure become more relevant than the objective sensory cues of the immediate environment (Korchin and Basowitz, 1954; Fenz, 1964).

Adaptation in the very young child, according to Piaget, requires the reciprocal processes of assimilation and accommodation to initiate changes in the behaviour repertoire based on the more representative and complex schema of the environment and its stimulus content which these processes help to create. Escalona's (1968) analysis of the dimensions of infantile activity suggests that different infants may need differential degrees of arousal, differing in kind, to achieve a balance of integrative processes. Variations in the intensity, rhythm or kind of activation or arousal may support some cognitive functions at the expense of others, so that maternal strategies could affect the over-all pattern of adaptive processes, some of which may develop more slowly, others less effectively. Even if Escalona's conclusions on the long-term effects of infant-mother interaction were only partially valid, we would have sufficient justification for postulating a casual relationship between them aternal characteristics of child orientation, personal need, reciprocal playfulness, love and affection, attentiveness, social and intellectual stimulation, type and degree of

controlling strategies on the one hand, and children's basic, primitive cognitive strategies and skills on the other.

Any stress generated by unfavourable mothering is most likely to affect two general cognitive processes: discovering and attending to relevant perceptual cues, and amount of perceptual information the child can handle. Both functions are partly age, intelligence and experience determined and are inevitably related. The older the child, the more stimulus complexity he can process in attaining concepts, while failure in concept development seems substantially due to attention to irrelevant stimulus cues (Osler and Kofsky, 1965).

The cognitive operation of conservation is here singled out for investigation because of its considerable ontogenetic importance. It develops during the early years of maximum exposure and sensitivity to maternal influences, and provides the basis for adult knowledge of the invariance of objects, events and ideas in the presence of misleading or irrelevant stimulus characteristics of the environment. It ranges from the concept of mother permanence to the concepts of mathematical invariances. (Conservation may even be involved in ambivalence—the child's dual perception of a loving and supportive mother, and her controlling, restricting and punishing role.) A recent study suggests that infants develop the concept of the permanence of person before they develop inanimate object permanence. Person permanence can affect the development of object permanence, and appears to be related to the quality of the infant's attachment behaviour towards his mother (Bell, 1970). Since person and object permanence are the first evidence of a conserving operation in the child, any mal-development at this stage may be a precursor of inadequacies or retardation of the conserving skill in later stages of cognitive development. If a child is exposed to socialization experiences which make it difficult to obtain certainty concerning maternal affection because it is ambivalently presented, or to experiences of rejection and loss of love, or to dominating control, a stress reaction may be elicited. In this event he may adopt a strategy of retreat from interactions with people and/or objects in an attempt to reduce stress. If these assumptions are only partially correct, a child may be unable to learn and to accept the logical inevitability of certain events and conclusions, and his capacity for acquiring the skill of conservation (and other skills) may be permanently weakened. Some support for this formulation may be seen in a study by Goldschmid (1968) who found that children with higher levels of conservation tended to be more objective in their self-evaluations, were described more favourably by their teachers and peers, and were less dominated by their mothers than children with lower levels.

The study reported here had two interlocking aims: to test by correlation for a general relationship between measures of maternal acceptance/rejection and measures of conservation, and to test the relationship experimentally. It was predicted that measures of maternal acceptance would correlate positively, and of rejection negatively with conservation capacity, and that consequently the children of rejecting mothers would possess a significantly lower conservation skill than the children of accepting mothers. It was assumed that a stressor operates in the relationship between a rejecting mother and her child which will adversely affect his conservation skill if the mother participates in the test. This would be particularly apparent in test situations requiring an increasing capacity for filtering out irrelevant

from relevant stimuli in a setting of progressively more complex cues from which principles of stimulus invariance must be generated.

No hypotheses were set up concerning a differential relationship for boys and for girls, because of lack of evidence to suggest that mothers of any socioeconomic group and education are more likely to reject their daughters than their sons (Maccoby, 1967). In the absence of such evidence, it was considered prudent to examine the male and female subgroups in this study for differences in rejection, since such differences might act as a moderator variable in the general relationship tested.

DESIGN

Conservation tests

The present study required the demonstration and measurement of individual differences in conservation. The traditional conception of conservation at any single level by Piaget and Inhelder (1962) and a succession of researchers concerned with the experimental verification of Piaget's genetic theory, appears to have been largely as a capacity of an "all-or-none" type. Additional differentiation among individual subjects has been achieved by adding a pre-conserving or, transitional category, or by deducing differences between subjects on the basis of the logical power of the verbal reasons accompanying responses of invariance (Lovell and Ogilvie, 1960). An interesting and important innovation has been the attempt to devise systematic scaling methods which could be applied to items of a problem series hypothesized as lying on a developmental gradient (Wohlwill, 1960), to test a maturational theory of cognitive development, but not as yet for the demonstration of individual differences at *any given point* of a developmental gradient. The use of subjects' responses in establishing individual levels of logical maturity leads to the expected problems associated with subjective evaluation and interpretation, but even if these could be overcome, the responses are usually obtained in relation to a single task presented with only little variation.

An attempt was made to overcome both these shortcomings by manipulating the test material itself so that it forms a series of problems of progressive order of difficulty. This was operationally defined by variations in the number of standards and variables, by the homogeneity or heterogeneity and complexity of standards and variables, and by the number of divisions, distributions and redistributions of the material. A pilot study, conducted in the traditional manner with plasticine, and water in jars, for conservation of substance and of volume respectively, had indicated that these variations in the presentation and the demands of a test situation, can yield ordinal scale data which show a significant regression of hypothesized order of difficulty on number of correct conserving responses, and on age.*

A full and detailed description of the new test instrument cannot be given here for reasons of space (see Hamilton, 1970; 1971; 1972). Basically, following the pilot

* *Note.* The term conservation of volume is not used here in the strictest Piagetian sense (i.e. with reference to occupied or displaced volume). Strictly speaking, the two conservation tasks described here measure conservation of continuous solid and liquid quantity. For purposes of clarity and economically distinguishing between the two tasks, however, the term volume is here preferred. Since the test is illustrated, confusion should be minimal.

study, it was decided to shorten the number of problems to 21 and to present all but the first three in pictorial form, i.e. standard size isometric drawings of solid shapes and glass jars were prepared showing for each problem the first and final stages of the distribution of substances and volumes with a suitable commentary appropriate to the task. For the more complex problems, the commentary had to describe as many as ten intermediate distribution stages. On the second card for each problem, there were either the dotted outlines of already distributed substances and the final distribution, or drawings of arrays of empty jars in columns, with the pictorial representation of the final distribution of water in jars for conservation of volume. The testing with each series was discontinued after subjects had given two consecutive non-conserving answers. A representative sample of the test is shown in Fig. 1. The arrows show the stages in the distribution of originally equal amounts of water in standards *C*, *Y* and *Z*, which are verbally described to subjects. In this problem (No. 19 conservation of volume) a high degree of complexity was postulated because of the large number of distributions and redistributions, the heterogeneity of standards and variables, the use of three instead of the customary two standards, and the number of subsidiary conservation operations necessary before subjects can correctly conclude that amounts *X* and *A* are equal. Each of the two conservation series was arranged in increasing order of difficulty as defined by a "complexity index" (46 for the problem shown in Fig. 1). For further details of this test, the reader is referred elsewhere (Hamilton, 1972).

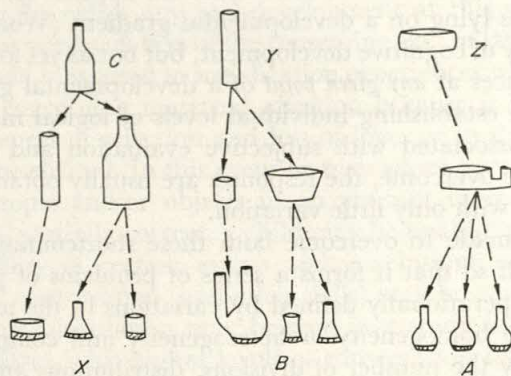


FIG. 1. Example of conservation test.

Since the experiment required two assessments of conservation of substance and conservation of volume, two parallel problem series of each type of conservation were prepared. Each pair of the parallel series was identical with respect to difficulty level, the difference between them being, (1) in terms of shapes of plasticine distributions, or vessels, (2) in terms of varying the spatial arrangement of standards and variables in the pictorial display, and (3) in terms of the background colour of the cards which was white in the first series, and pale yellow in the second. Initially, two scores were derived from each series for each subject: a *raw score*—the sum of correctly answered problems, and a *weighted score*—each raw score of 1 multiplied by a factor

of 1 to 7 depending on the power and adequacy of the verbal justification supporting a conserving response. To achieve a reliable as well as relatively valid classification of the verbal responses, all answers given by each age group to all problems were typed on cards and a Q sort was performed. A score of 1 was given to an equality response virtually unexplained, a score of 2 was given when the answer referred to and described the process of distribution, a score of 6 applied to answers indicating that the experimenter had "only" or "just" carried out a transformation of the material, while the top score of 7 was reserved for answers indicating additionally that syllogistic reasoning figured in the deduction of invariance.

The pilot study had indicated not only that the distribution of results to be expected was likely to be not normal and bunched particularly for the youngest and oldest subjects, but also that the *per cent* change shown on the second of the parallel series, as a function of scores on the first series, was likely to yield artifactual results because of the fixed minimum and maximum scores of the scale. It was, therefore, decided to carry out angular transformations on the unweighted and weighted scores by the formula where r = raw score, and $n = 21$ —the maximum

$$\sin^{-1} \sqrt{\frac{r}{n+1}} + \sin^{-1} \sqrt{\frac{r+1}{n+1}}$$

raw score. Four sets of data were available, therefore, for each subject on each of the two conservation of substance and the conservation of volume series.

A problem series consisting of very similar tasks and identical solutions is susceptible to response set. To reduce the influence of this variable, sets of "misleading" and buffer items were randomly dispersed throughout the series. In the misleading problems a response of invariance, equivalence or identity was wrong because not all the standard substance or volume had been distributed. The buffer items required the use of different operations: classification, and inclusive and exclusive categorization. The reliability of the conservation of substance series was 0.80, and of volume 0.84 (transformed raw scores).

Assessment of maternal/acceptance rejection

The use of interviews (Sears *et al.*, 1958) and self-administered questionnaires (Schaefer and Bell, 1958) in the assessment of maternal attitude has been extensively criticised (e.g. Becker and Krug, 1965; Zuckerman *et al.*, 1958) and it is generally accepted that no single technique which is not only reliable and valid at the time of administration but also predictively reliable, has yet been developed. A combination of four methods was finally chosen to reduce the validity problems attached to individual methods, and at the same time obtain some evidence of internal validity. They were: a self-administered questionnaire, a paired-comparison task involving critical child-rearing strategy statements, projective material from T.A.T. pictures, and the mother's description of her child. The questionnaire contained 14 sub-scales of the *PARI* (Schaefer and Bell, 1958), a *Lie* scale constructed from adaptations of items in the *MMPI* and *MPI*, and 37 items from the U.S.C. *Acceptance/Rejection* (A/R) scale (Kinstler, 1961).

The present report will be mainly concerned with responses to the acceptance/rejection items. These are classified according to whether they aim at covert maternal

rejection and overt acceptance or whether they clearly state rejecting or punitive attitudes. Examples of the former are "I always love my child", "I try not to express anger with my child openly". Examples of unambiguously rejecting items are: "Playing with children should wait until the housework is done", "I have often wished that I were single again".* There were four response categories ranging from "strongly agree" to "strongly disagree", and since more than one of the methods of assessment were applied to subjects on the same occasion, the questionnaire was completed in the presence of the research assistant.

The following A/R scale categories were set up aiming at the different kinds and combinations of acceptance and rejection. Each category contained five items worded in the appropriate direction, and in the categories listed here capital and small case letters respectively refer to the overt and covert maternal attitudes. The questionnaire item numbers are given in brackets.

Rr I. Rejection openly expressed, underlying rejection present, (Nos. 111, 112, 114, 115, 120).

Rr II. Same as above, except R modulated, (Nos. 106, 107, 113, 116, 119). *Ra.* Modulated rejection expressed, little or no underlying rejection. Underlying element of acceptance assumed, (Nos. 108, 110, 117, 121, 122). *A.* Straightforward acceptance without any evidence of overt or covert rejection, (Nos. 88, 89, 91, 94, 95, 103, 118). *Aar.* Acceptance of child expressed, with underlying conflict of acceptance and rejection. Acceptance conditional upon child's obedience and conformity, (Nos. 99, 102, 104, 105, 109).

Ar I. Same as *Aar* without apparent conflict about underlying rejection, (Nos. 87, 92, 93, 96, 100). *Ar II.* Stronger than *Ar I*, strong ambiguity of feeling communicated to child, (Nos. 86, 90, 97, 98, 101). *Rr's* *Rr I* + *Rr II*; *Ar's* *Ar I* + *Ar II*.

For the assessment of maternal attitude by paired-comparison, two situations considered to be representative of the *A/R Scale*, and of parent-child conflict, were selected. These were maternal response to 1. physical aggression from the child, and 2. the child's rejection of maternal affection. To test child aggression, subjects were given the following instructions: "Supposing . . . hits you in the face because he/she is angry with you, how would you handle this?". Subjects were then presented with pairs of hypothetical responses, printed on cards, ranging from the least to the most permissive, counterbalanced for order of presentation, left/right positioning and differential severity of the items in each pair. The 13 hypothetical responses ranged from: "Hit him back hard on whatever part of his body comes into the way of my hand" and "Hold his hands down firmly and tell him off angrily", to "Reason with him, and point out that violence can only lead to further violence, that we cannot always have things the way we want, and that arguments can be settled without fighting", and "Tell him that I don't like being hit, that I would not now hate him because he hit me, that he is not always so angry with me, and that it is usually much better to first find out why one is angry".

To test the child's rejection of maternal affection, subjects were given the following instructions: "Supposing . . . has wanted to have a particularly expensive present for a long time. You have never been quite sure how badly he/she really

* Copies of the complete questionnaire may be obtained from the author at the Department of Psychology, University of Reading, Building 3, Earley Gate, Whiteknights, Reading RG6 2AF, Berkshire.

wanted it and have been inclined to say *No*. Supposing you had finally decided to get him/her what he/she wanted and then found that he/she was not pleased with the present, but seemed to ignore it and did not even say *thanks*. How would you handle this?". The paired comparison items ranged from: "I'd probably say . . . If you don't like it, that's just tough luck", "When this sort of thing happens I might tell him that I wished I had no children", and "Tell him off harshly for making me waste my money", to "I'd suggest that if he doesn't want it, we might exchange it and get what he really wants", and "I'd say sorry I seem to be out of date, I thought you wanted this present".

For the purpose of isolating the present maternal criterion groups, rejection as shown by the paired-comparison technique was scored whether it was overt or covert, unambiguous or in combination with overt acceptance, while acceptance was scored only in relation to unambivalent acceptance. For this purpose the 13 items of each of the two paired-comparisons (*P.C. I* and *P.C. II*) were divided into three groups to correspond to the acceptance/rejection categories listed above. Thus, *P.C. I*, items 1-5, and *P.C. II* items 1-5 are aimed at categories *Ar II* and *Rr I*, *P.C. I* items 6-8 and *P.C. II* items 6-9 are aimed at categories *Ar I*, *Rr II* and *Aar*, and *P.C. I* items 9-13 and *P.C. II* items 10-13 are aimed at the acceptance categories *A* and *Ra*.

The imposition of a 7-point scale on an assumed acceptance/rejection continuum was at this stage subjective. (The internal validity of the method is considered in the Results section.) Any deficiencies in the validity of any single one of the techniques for the selection of maternal criterion groups used here, are probably less serious than usual because of the employment of multiple selection criteria.

The third screening technique was projective and employed plates 13B, 5, 7GF and 7BM of the T.A.T. (Murray, 1938) representing actual or inferable parent-child interactions, and given in that order. The instructions were adapted from those prepared by Murray, and *verbatim* protocols were taken. Scoring was on an uncomplicated objective basis: giving a score of 1 to each overt statement indicating respectively, (a) unconditional love, (b) strong affection, and (c) a positive and flexible orientation towards child figures in the stories, or in respect of statements indicative of (d) hostility, (e) punitiveness, and (f) strict control. An A/R index was calculated for each maternal subject on the basis of

$$\frac{\text{Acceptance Score}}{\text{Rejection Score}} \times 100.$$

The fourth device for assessing maternal attitude was the mother's description of her child (the potential subject in a family with more than one child at the same school). The instructions were quite unstructured and mothers were encouraged to speak freely and to choose their own salient descriptive points. These sketches were scored in the same way as the T.A.T. protocols. Inter-scorer agreement was 0.79 for the T.A.T. protocols, and 0.71 for the mother's description of her child.

The maternal assessment data were obtained by the research assistant in Toronto in two or three interview sessions with mothers. The scoring of the projective material was carried out by the author in England, who also constructed the maternal criterion groups which were to yield the child subjects. The group membership of

subjects was not divulged to the experimenter. Experimenter bias was, therefore, controlled at more than one level. Since the experiments with the children required a control group to test for practice effect (*vide infra*), the maternal subjects were divided into three groups: acceptors (Group A), rejectors (Group B), controls with intermediate scores (Group C). The following parameters were used in group construction: the A/R index obtained from T.A.T. stories and the mother's description of the child, four rejection and acceptance scores from the two-paired-comparison series, and scores on four indices of the A/R questionnaire. Each maternal subject was ranked according to her score on each of the nine parameters and quartile groups were constructed. The quartile ranks for each subject were then combined to yield two extreme groups with respectively low and high average ranks, as well as the intermediate group.

Effect of maternal attitude on conservation

The experimental part of the investigation was directed towards achieving a manipulation of the socio-emotional climate in which conservation problem solving was to be carried out.

Two proven methods of introducing socio-emotive stress into the task setting: having the experimenter's accomplice or the child's mother present for the second series, proved to be impracticable. Instead tape recordings were made at the time of the maternal interviews, in which the mother instructed her child by name to help the experimenter with the task and to carry this out to the best of his ability. The recording was played to the experimental groups at the beginning and twice more at intervals of five problems during conservation testing, with the experimenter additionally referring to the message at scattered points in the administration of the series. All subjects appeared to recognise their mother's voice, their behavioural response ranging from overt glee to apparent indifference. No recordings were played to the control group.

METHOD

Subjects

Individual appointments in their own homes were made with the mothers of all the pupils of two schools in North Toronto in the Kindergarten classes and Grades 1-3. The total number of children in these classes was 241, but since these were neighbourhood schools, many of them had siblings in one of the classes. The subject pool was, therefore, reduced to 170 families. Of the mothers approached with children in the 8 classes, 87 per cent agreed to participate in the investigation. The maternal assessments yielded the following number of children for the experiment: Kindergarten = 18, Grade 1 = 35, Grade 2 = 31 and Grade 3 = 25. Subgroups A, B and C within each age were constructed from the available numbers so as to allow as far as possible for an equal representation of the two schools used in the study, as well as equating for age, sex, and socio-economic group membership of the home. None of the children was subnormal or receiving special treatment for educational or behavioural problems.

Tests

In addition to the four conservation test series, the WISC (or WPPSI in the case

of KG subjects) was administered in abbreviated form (6 sub-scales), as well as the Wide Range Achievement Tests (*WRAT*) for the assessment of educational level. Table 1 gives the details of educational and intellectual assessments.

TABLE 1. DESCRIPTION OF EXPERIMENTAL GROUPS

Grade	Exptl. group	N.'s	Mean age	Mean socio-economic grouping	I.Q.s			Educat. attainment (percentiles)		Mean Dig. Span (Wt. scores)
					Verbal	Perform.	Full scale	Arith.	Reading	
KG	A	6	5-10	2.25	98.5	109.2	103.8	54.2	27.3	8.8
	B	6	6-0	2.70	102.5	112.5	107.8	60.0	51.7	10.7
	C	3	6-0	2.70	103.7	137.3	122.0	73.0	51.7	10.7
1	A	10	6-7	2.70	106.9	106.1	107.1	49.2	56.9	12.0
	B	10	6-7	2.70	100.0	106.6	103.5	35.9	41.3	10.0
	C	6	6-9	2.80	101.5	116.0	109.2	46.2	45.3	9.2
2	A	8	7-9	2.60	104.5	106.8	106.0	31.9	51.1	9.1
	B	8	7-9	2.75	112.1	109.0	111.6	46.1	61.1	11.4
	C	6	7-8	2.75	110.0	110.2	111.3	41.0	67.2	11.7
3	A	8	8-11	2.60	110.9	108.4	110.6	43.3	69.1	10.8
	B	8	9-1	2.90	107.6	115.0	112.5	40.1	56.0	9.9
	C	6	8-11	2.40	114.5	118.0	117.8	52.0	85.3	10.2

Subjects were seen individually three times in the schools' Medical Room between 2 and 3 months after the maternal assessments. The intelligence and educational testing was done in the first session, followed by conservation testing during Sessions 2 and 3. Each session lasted no more than 1.5 hr, and the mean interval between Sessions 2 and 3 was 2.5 days. The degree of success of the procedures for the control of extraneous and biasing variables can be gauged from Table 1. Only the following intergroup differences were significant using the Mann-Whitney *U* Test: KG Group B had higher Reading Test scores than KG-A ($p < 0.05$); KG-B had higher performance and Full Scale I.Q.s than KG-A (both $p = 0.02$); Grade 1-A scored higher on the Digit Span subtest than Grade 1-B and Grade 1-C (both $p < 0.05$), and Grade 1-B scored higher than Grade 1-C on the same test ($p < 0.05$); Grade 2-C was better on Digit Span than Grade 2-A ($p < 0.05$), Grade 3-C performed better on Reading than Grade 3-A ($p < 0.05$).

The control subjects in each Grade group were children whose mothers were rated as intermediate on the rejection/acceptance continuum. The difference between their scores on Conservation Series 2 and Conservation Series 1 constituted the practice effect. A simple subtraction of this score from the scores of the experimental groups was redundant since the correction would have been constant and would not have altered the relative positions of accepted and rejected children. The effect of practice could be differentially demonstrated only with angularly transformed scores which would enhance minimal differences at the extremes of the distribution of scores. The practice effect was only used therefore in the analysis of *percentage* changes from Series 1 to 2, relatable to maternal participation in conservation testing.

There were 87 variables to yield inter-correlations. Since the total number of subjects was only 70, the variables used in the principal components factor analysis were reduced to 67, omitting the weighted sub-tests scores from the intelligence tests and certain categories of scoring conservation involving the "misleading" and "dummy" problems (Nos. 10-15 and 36-49 in the list of variables shown in the Appendix).

Instructions

The instructions to subjects for the conservation tests (including the "misleading" items) stressed the need to attend carefully to what the experimenter was doing or saying. Since the first three problems in each series were presented concretely, and since each successive problem involved the introduction of additional parameters, the commentary was standard only in a general sense. If subjects appeared to be puzzled, the instructions and commentary were repeated. The concrete items gave an opportunity to check that they generally understood the meaning of the terms "more", "less" and "equal", because they were invited to help in the task of equating the standard quantities of water. For the plasticine problems, the total contents of two containers were extracted in front of them, and they were informed that the shop had sold equal amounts in each container. No subject availed himself of the opportunity to carry out corrections on the plasticine balls by adding to one or taking away from the other. Responses particularly from the younger children frequently referred in concrete terms to the original equality of the standards. At the end of the manipulation or the description of the manipulation of materials, all subjects were asked: "Does this one have more (less) than this one, or is there as much here as there?" The order of the critical phrases and the substances or volumes pointed to first was counterbalanced. Subjects' responses were followed by the question: "Why are they the same (equal)?" or "Why is there more (less) here than there?". Subjects' answers were recorded *verbatim* to permit the weighting of correct responses according to the logical power of the reasons given in support of an equality response. The instructions for the "dummy" items testing class inclusion and exclusion were appropriately different.

RESULTS

Between-group differences

Because the KG subgroup was virtually non-conserving with the exception of two subjects, it was excluded from all statistical analyses. The average raw conservation scores of the remaining three subgroups on initial conservation testing (Series 1) are shown in Fig. 2.

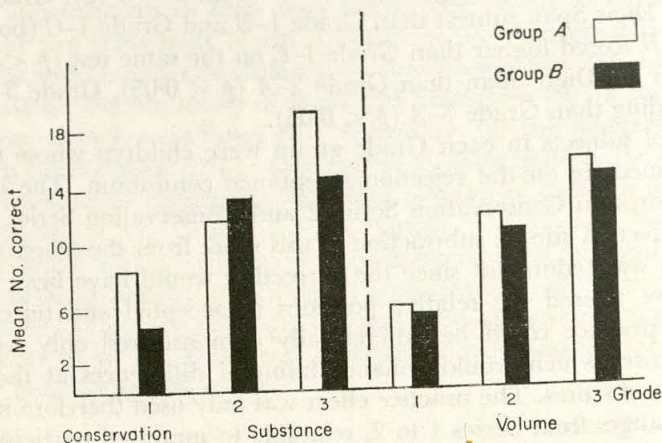


FIG. 2. Maternal rejection and conservation.

In 5 out of 6 instances on initial testing, the accepted subjects (Groups A) obtained higher mean scores than rejected children (Groups B). After re-testing with maternal participation, this rose to 6 out of 6 comparisons. Several analyses of variance and subsequent testing for between-group differences, gave a number of significant F ratios, and between-group differences favouring accepted subjects but also some significant Sex $\times$ Group interactions. For more than 70 per cent of the comparisons between the criterion groups on both administrations of the conservation test series, and using the results of all scoring methods, the level of Groups A was superior to that of Groups B (Hamilton, 1971). The effect of the experimental manipulation of the maternal attitude variable is shown in Fig. 3. The data plots for the three school grades separately are in terms of mean transformed raw scores, unweighted by quality of verbal response. They are given for combined and separate sex groups. None of the Group $\times$ Maternal Participation interactions was significant ($p < 0.20$) which perhaps was to be expected with the significant Sex $\times$ Group interactions.

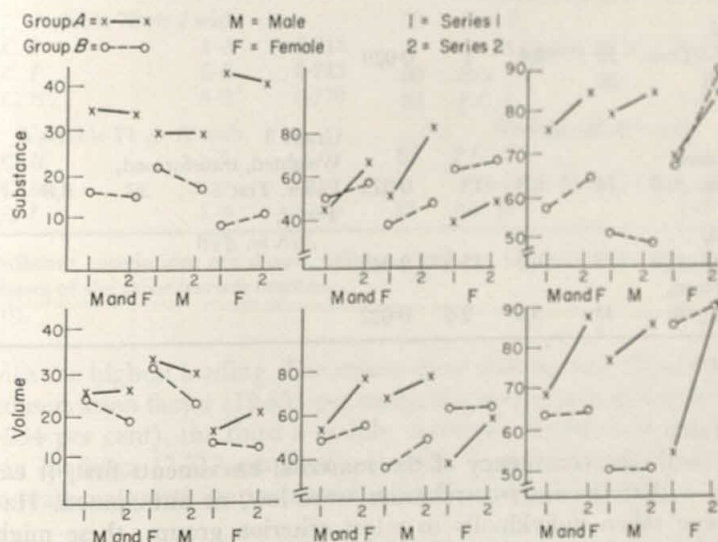


FIG. 3. Effect of maternal participation on conservation problem solving.

Inevitably, further splitting by sex led to rather small sub-groups. Nevertheless, as far as the present N 's are concerned, this analysis follows up the significant Sex $\times$ Group interactions and indicates that the postulated relationship between maternal acceptance/rejection and conservation is less clear-cut for girls than for boys. The significant and near-significant differences between the experimental groups, combined and split by sex, are summarized in Table 2.

Support for the central hypothesis, therefore, comes mainly from the male sub-groups. It is suggested below that the attenuation of the results is partly due to the selection of criterion groups with a better differentiation for boys than girls.

TABLE 2. CONSERVATION DIFFERENCES BETWEEN MATERNALLY ACCEPTED AND REJECTED CHILDREN

Conservation score	Substance				Conservation score	Volume			
	Variable	n's	U	p*		Variable	n's	U	p*
Grade 1					Grade 2				
Raw, transformed, Test 1, ♀A vs. ♀B	18	4,4	2	0.057	Weighted, transformed, Test 1, ♂A vs. ♂B	26	4,4	1	0.029
Raw, transformed, Test 2, ♀A vs. ♀B	19	4,4	2	0.057	Weighted, transformed, Test 2, ♂A vs. ♂B	27	4,4	2	0.057
Grade 2									
Raw, transformed, Differ. Test 2—Test 1, ♂♀A vs. ♂♀B	22 84	8,8	11.5	0.017					
Raw, transformed, Differ. Test 2—Test 1, ♂A vs. ♂B	22 84	4,4	0	0.014					
Weighted, transformed, Differ. Test 2—Test 1, ♂A vs. ♂B	28 86	4,4	1	0.029					
Grade 3					Grade 3				
Raw, transformed, Test 1, ♂♀A vs. ♂♀B	18	8,8	13	0.025	Weighted, transformed, Differ. Test 2—Test 1, ♂♀A vs. ♂♀B	23	8,8	14	0.032
Weighted, transformed, Test 2, ♂♀A vs. ♂♀B	25	8,8	15.5	0.046					
Raw, transformed, Test 1, ♂A vs. ♂B	18	5,5	2.5	0.022					

* 1-tail tests.

Correlational data

Dealing with the consistency of the maternal assessments first, it can be seen from Table 3 that the inter-correlations were low, as anticipated. Had the test variables been taken individually to select criterion groups, these might well be considered as lacking in validity. Some evidence that validity is rather better than it appears, comes from *PARI* Scales, particularly, Seclusion of Mother, Breaking the Will, Inconsiderateness of Husband and Intrusiveness.

In general, the variances of the present instruments are small. While this degree of homogeneity was expected through the deliberate exclusion of abnormally rejecting mothers, it was expected to affect the size of the correlations with conservation. These are shown insofar as they are significant in Table 4. It is apparent that maternal attitude as measured by paired-comparison is more consistently related to conservation than acceptance/rejection measured by questionnaire. This relationship is amplified by the results of the principal components analysis. Attention was focussed on the first five components only. The criterion of inclusion employed here was to take values which were no smaller than 75 per cent of the

TABLE 3. CONSISTENCY OF MATERNAL ASSESSMENTS

Var. No.	Description	Rho	Var. No.	Description	Rho
Variable 65 <i>Rr I</i> with			Variable 72 <i>P.C. I</i> 1-5 with		
74	<i>P.C. I</i> 9-13	-0.261	75	<i>P.C. II</i> 1-5	0.281*
77	<i>P.C. II</i> 10-13	-0.199	79	<i>T.A.T.</i>	
Variable 66 <i>Rr II</i> with			83	<i>P.C. II</i> 1-9	0.203
76	<i>P.C. II</i> 6-9	0.292*	Variable 74 <i>P.C. I</i> 9-13 with		
77	<i>P.C. II</i> 10-13	-0.205	75	<i>P.C. II</i> 1-5	-0.305*
79	<i>T.A.T.</i>	-0.207	79	<i>T.A.T.</i>	0.207
Variable 67 <i>Ra</i> with			80	<i>Rr's</i>	-0.229
76	<i>P.C. II</i> 6-9	0.241	Variable 75 <i>P.C. II</i> 1-5 with		
Variable 68 <i>A</i> with			82	<i>P.C. I</i> 1-8	0.312*
73	<i>P.C. I</i> 6-8	0.246	Variable 76 <i>P.C. II</i> 6-9 with		
77	<i>P.C. II</i> 10-13	-0.263	78	<i>Rr's + Ar's</i>	0.250
83	<i>P.C. II</i> 1-9	0.273	81	<i>Ar's</i>	0.281*
Variable 69 <i>Aar</i> with			Variable 77 <i>P.C. II</i> 10-13 with		
79	<i>T.A.T.</i>	-0.224	80	<i>Rr's</i>	-0.229
Variable 70 <i>Ar I</i> with			Variable 78 <i>Rr's + Ar's</i> with		
72	<i>P.C. I</i> 1-5	-0.213	79	<i>T.A.T.</i>	-0.201
73	<i>P.C. I</i> 6-8	0.225	Variable 79 <i>T.A.T.</i> with		
76	<i>P.C. II</i> 6-9	0.270	80	<i>Rr's</i>	-0.269
Variable 71 <i>Ar II</i> with			82	<i>P.C. I</i> 1-8	-0.254
75	<i>P.C. II</i> 1-5	-0.201	Variable 80 <i>Rr's</i> with		
76	<i>P.C. II</i> 6-9	0.214	83	<i>P.C. II</i> 1-9	0.216
82	<i>P.C. I</i> 1-8	-0.210	Variable 82 <i>P.C. I</i> 1-8 with		
			83	<i>P.C. II</i> 1-9	0.211

Only significant correlations are shown, using a 1-tail test of significance. All correlations between sub-classes of the same test are omitted.

* $p < 0.01$.

variable with the highest loading. The results show that the first factor (component) is a pure conservation factor (19.353 per cent), the second a pure maternal attitude factor (10.934 per cent), the third a mainly maternal attitude factor with negative conservation loadings (7.717 per cent), Factors 3 and 5 appear to describe the response to maternal participation demonstrated in other analyses.

DISCUSSION

Within the limits of the present research samples, there seems to be considerable support for the postulated relationship between maternal acceptance/rejection and conservation of substance and volume conceived as a continuous variable. The results of the correlation and factorial analyses supplement the results of the experimental part of the investigation which appeared to suffer from the moderating effects of sex-differences. Predictions concerning such differences in relation to conservation were avoided because they seemed to lack a sound theoretical basis. While it is true that Hurley (1965) found evidence of a significant relationship between intelligence and rejection for mother-daughter pairings, the double-bind hypothesis of maternal ambivalence and its role in the cognitive decrements in the schizophrenias, for example, is not limited to daughters. It is likely that the relation-

TABLE 4. CORRELATIONS BETWEEN CONSERVATION AND MATERNAL ACCEPTANCE/REJECTION

Var. No.	Description	Rho	Var. No.	Description	Rho
	*Variable 19 SS_1 with			Variable 35 SD_3 with	
73	<i>P.C. I</i> 6-8	-0.287	82	<i>P.C. I</i> 1-8	-0.213
83	<i>P.C. II</i> 1-9	-0.200		Variable 37 SS_4 with	
	Variable 20 VUS_1 with		73	<i>P.C. I</i> 6-8	-0.228
73	<i>P.C. I</i> 6-8	-0.209		Variable 38 VUS_4 with	
	Variable 21 VS_1 with		75	<i>P.C. II</i> 1-5	0.225
73	<i>P.C. I</i> 6-8	-0.311	79	<i>T.A.T.</i>	-0.260
	Variable 22 SD_1 with			Variable 39 VS_4 with	
68	<i>A</i>	0.265	73	<i>P.C. I</i> 6-8	-0.275
73	<i>P.C. I</i> 6-8	-0.259	82	<i>P.C. I</i> 1-8	-0.226
77	<i>P.C. II</i> 10-13	0.273		Variable 40 SD_4 with	
83	<i>P.C. II</i> 1-9	-0.259	67	<i>Ra</i>	0.224
	Variable 23 VD_1 with		68	<i>A</i>	-0.240
69	<i>Aar</i>	0.238	70	<i>Ar I</i>	0.228
73	<i>P.C. I</i> 6-8	-0.199		Variable 41 VD_4 with	
83	<i>P.C. II</i> 1-5	-0.293	79	<i>T.A.T.</i>	0.209
83	<i>P.C. II</i> 1-9	-0.233		Variable 84 SD_5 with	
	Variable 25 SS_2 with		69	<i>Aar</i>	0.220
73	<i>P.C. I</i> 6-8	-0.278	73	<i>P.C. I</i> 6-8	-0.246
	Variable 27 VS_2 with		76	<i>P.C. II</i> 6-9	-0.254
73	<i>P.C. I</i> 6-8	-0.276	77	<i>P.C. II</i> 10-13	0.306
	Variable 28 SD_2 with		83	<i>P.C. II</i> 1-9	-0.303
68	<i>A</i>	-0.241		Variable 85 VD_5 with	
75	<i>P.C. II</i> 1-5	-0.222	68	<i>A</i>	-0.229
	Variable 31 SS_3 with		73	<i>P.C. I</i> 6-8	-0.247
73	<i>P.C. I</i> 6-8	-0.209	75	<i>P.C. II</i> 1-5	-0.246
	Variable 32 VUS_3 with		82	<i>P.C. I</i> 1-8	-0.286
75	<i>P.C. II</i> 1-5	0.202		Variable 86 SD_6 with	
79	<i>T.A.T.</i>	-0.231	65	<i>Rr I</i>	-0.234
	Variable 33 VS_3 with		73	<i>P.C. I</i> 6-8	-0.293
73	<i>P.C. I</i> 6-8	-0.250	77	<i>P.C. II</i> 10-13	0.280
	Variable 34 SD_3 with		78	<i>Rr's + Ar's</i>	-0.213
68	<i>A</i>	-0.236	83	<i>P.C. II</i> 1-9	-0.276
70	<i>Ar I</i>	0.228		Variable 87 VD_6 with	
			73	<i>P.C. I</i> 6-8	-0.295
			82	<i>P.C. I</i> 1-8	-0.227

$N = 70$, 1-tail test.

* The conservation measures are defined in the Appendix.

ship between conservation and maternal acceptance/rejection is mediated by identification and role structure, as well as by maternal needs to elicit dependence, to dominate and over-protect and over-control, to be disciplinarian and controller of resources, which in a non-pathological group of maternal and child subjects may occur more frequently in mother-daughter relationships. Consistent with this is the present evidence that the *percentage* gain from the first to second administration of the conservation series (maternal participation) is greater for girls than boys. It was suggested above that the rejection measures may have yielded unequal differences between the sex samples of the experimental subgroups, so that the differences between boys of Groups *A* and *B* were greater than those between girls, and that

the boys of the accepted groups were in fact less "rejected" than the girls. Analysing the number of significant differences on variables 65-83, the results shown in Table 5 emerge. In addition to the sex differences in maternal acceptance/rejection,

TABLE 5. SEX DIFFERENCES IN MATERNAL REJECTION

Grade	♂A v. ♂B	♀A v. ♀B	♂A v. ♀A	♂A v. ♀B
I	10	6	0	1
II	7	2	7	0
III	4	4	2	0

Data give the No. of comparisons in which the second group scores significantly higher $p < 0.05$, 2-tail test, on Variables 65-83.

it also indicates that this moderator variable is smallest for Grade 3 children from whom the strongest evidence for the hypotheses was obtained in the analyses of variance.

Despite support for the postulated relationship, identification of the central mediating process(es) remains at the inferential level. Even if there were no shortcomings in the validity of the measures of maternal acceptance/rejection (which must remain in the absence of external validation), there is no direct evidence that the rejected children responded to what they experienced as a stressful situation. There is also no direct evidence that the progressive difficulty factor in the conservation series was perceived as one of progressive difficulty. Both outcomes were predicted, however, and, therefore, remain the most plausible explanations of the results.

SUMMARY

Attempts were made to derive a plausible relationship between socialization experiences and conservation. It was postulated that children of accepting and rejecting mothers would differ from an early age in patterns of arousal and activation levels, in experiences of stress, and in their willingness to obtain social feedback in problem solving. Therefore, it was proposed, children exposed to rejection might find it more difficult to apply logical strategies in information processing, and to filter out irrelevant from relevant stimuli in conservation tests. As predicted, conservation assessed by new pictorial tests of increasing difficulty was shown to be less well developed in children of rejecting mothers.

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APPENDIX

Description of all variables

- | | |
|------------------|-----------------------|
| 1 School Grade | 4 Age |
| 2 Research Group | 5 Socioeconomic Group |
| 3 Sex | |

6-17 *Intelligence and attainment*

WISC, Binet Vocabulary and WRAT

Vars. 10-15 omitted from factorial analysis

18-23. *Conservation Scores 1*

Raw scores. Angularly transformed

- | | |
|--------------------------------|---|
| 18 SUS ₁ Substance. | Series 1 (Unstressed) |
| 19 SS Substance. | Series 2 (Stressed) |
| 20 VUS ₁ Volume | Series 1 (Unstressed) |
| 21 VS ₁ Volume | Series 2 (Stressed) |
| 22 SD ₁ Substance | Difference between Stressed and Unstressed.
(SS ₁ -SUS ₁) |
| 23 VD ₁ Volume | Difference between Stressed and Unstressed.
(VS ₁ -VUS ₁) |

The terms "Unstressed" and "Stressed" are used here somewhat loosely to distinguish the first from the second application of the conservation test series which took place with maternal participation.

24-29 *Conservation Scores 2*

Weighted scores. Angularly transformed

SUS₂ etc. definitions as for Vars. 18-23.30-35 *Conservation Scores 3*

Raw scores prior to first Misleading

Problem failed.

Angularly Transformed.

SUS₃ etc. definitions as for Vars. 18-23. SUS₄ etc. definitions as for Vars. 18-23.

Omitted from factorial analysis

36-41 *Conservation Scores 4*

Weighted scores prior to first Misleading

Problem failed.

Angularly Transformed.

42-49 <i>Dummy and Misleading Problems</i>	50-64 <i>Parental Assessments</i> <i>Schaefer-Bell PARI</i> (and "L" Scale)
--	---

Omitted from correlational and
and factorial analysis.

Variables 30-49 were derived from the analysis of buffer items.

65-71, 78-81 <i>Acceptance/Rejection</i> <i>Scale and T.A.T.</i>	72-77, 82-83 <i>Paired Comparisons</i>
65 Rr I	72 P.C. I. 1-5
66 Rr II	73 P.C. I. 6-8
67 Ra	74 P.C. I. 9-13
68 A	75 P.C. II. 1-5
69 Aar	76 P.C. II. 6-9
70 Ar I	77 P.C. II. 10-13
71 Ar II	82 P.C. I. 1-8
78 Rr's + Ar's	83 P.C. II. 1-9
79 TAT Rank	
80 Rr's	
81 Ar's	

Definitions in text

84-85 *Conservation scores 5*

86-87 *Conservation scores 6*

Raw Scores corrected for Practice Effect.
Angularly Transformed.

Weighted Scores corrected for Practice Effect.
Angularly Transformed.

84 SD₅ Substance Difference
85 VD₅ Volume Difference

86 SD₆ Substance Difference
87 SD₆ Volume Difference

Definitions as for Vars. 22-23.

SOCIAL CLASS, INTELLIGENCE AND THE DEVELOPMENT OF CHILDREN'S PLAY INTERESTS

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INTRODUCTION

KNIVETON AND STEPHENSON (1972) suggested that middle-class children were less susceptible than working-class children to the influence of a film model, due to the greater ability of the former to develop play interests. This interpretation is supported by the work of many other researchers. Bernstein and Young (1967) found that middle-class mothers showed a greater tendency to regard play as having educational significance than working-class mothers and that the significance of a toy for the child depended more on the mother's attitude towards it than on its intrinsic merits. Newson and Newson (1968) indicated that middle-class mothers join in play and verbalize more with their children than do working-class mothers. Findings by Sears, Maccoby and Levin (1957) that middle-class children are reared in a more permissive environment and by Baldwin (1948, 1949) and Sears *et al.* (1957) that children brought up in "permissive" environments tend to be more inquisitive, original and constructive in their play suggest social class to be an important influence on a child's play behaviour.

The effect of intelligence on play behaviour has also been reported by Noble (1970) using a modified form of Barker, Dembo and Lewin's (1941) scale of constructiveness showed a relationship between constructiveness and intelligence. Children of above average intelligence played more constructively than those of less intelligence. Lehman and Witty (1927) characterise the play of intelligent children as being more varied, versatile, resourceful and mature, and that retarded children showed less originality in their play activities, preferred games without complicated rules and games more usually played by younger children.

The present experiment investigates the well established gross correlation between social class and intelligence found by many researchers (Mussen, Conger and Kegan, 1963) with particular reference to Kniveton and Stephenson's (1972) interpretation of the differing abilities of the two class groups to develop play interests. In this latter experiment, a reduction of "fitting" between toys, and decrease in number of toys played with was considered symptomatic of a development of interests. Using these measures it was apparent that middle-class children showed more interest in their play than working-class children. Play sessions, however, were only 15 min long and took place on successive days. A longitudinal analysis showed no indication of a progressive intensification of interests. This could, however, be accounted for by the presence of a novelty factor in each play session.

In the present experiment the development of interests is examined in more

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detail. Measures presumed to reflect interest include "flitting"; number of toys played with, and constructiveness of play. Social class and intelligence are the variables investigated, and to overcome the novelty effect probably present in the Kniveton and Stephenson (1972) experiment, play is observed in one session lasting 75 min, and changes in play behaviour over this period will be investigated with particular reference to the onset of boredom as it is anticipated that children with less interest will be more susceptible to this as their play behaviour will be intrinsically less rewarding.

The following hypotheses were tested:

- (i) Middle-class children will develop more interests in their play than working-class children.
- (ii) Middle-class children will play at a higher level of constructiveness than working-class children.
- (iii) Middle-class children as a consequence of their interest in their play are less likely than working-class children to show signs of boredom.
- (iv) Middle-class children will spend more time in talking to the experimenter than working-class children.

In view of the relationship between intelligence and play, and also between intelligence and social class, the effect of intelligence will be examined in relation to the above hypotheses.

METHOD

Subjects

Subjects were 18 boys from two schools in Nottingham. They ranged in age from 63 to 69 months, with a mean age of 66.1 months. Using the Registrar General's Classification (1960) of the fathers' occupations, there were 9 boys from Classes I, II and IIIa and 9 from Classes IIIb and IV. Subjects were selected from all the available boys in the age range 63-69 months attending the two schools. The children were tested (using the Wechler Intelligence Scale for Children) in random order and included in the appropriate experimental group according to social class and intelligence. Testing continued until from each class group, three children were selected as being within three intelligence levels—arbitrarily defined as above average (full scale I.Q. 110 or more), average (full scale I.Q. 100 to 109), below average (full scale I.Q. 99 or less) (see Table 1).

TABLE 1. FULL, VERBAL AND PERFORMANCE MEASURES OF I.Q. (WISC)
FOR EACH CHILD IN THE 6 GROUPS OF CHILDREN

Intelligence		Middle-class			Working-class		
		Full	Verbal	Performance	Full	Verbal	Performance
High	(1)	122	120	120	113	108	117
	(2)	110	101	118	120	109	128
	(3)	136	139	127	116	104	127
Average	(1)	106	114	96	104	95	113
	(2)	104	115	92	100	104	96
	(3)	103	104	101	107	109	104
Low	(1)	88	90	87	85	82	90
	(2)	81	89	76	91	79	106
	(3)	84	80	92	94	92	97

Experimental play situation

The experimental room contained four chairs, a chair and table at which the experimenter sat, and a one-way mirror, with which the subjects were familiar. The toys used in the experiment included:

- (1) 2 balls: 1 large, 1 small.
- (2) Bucket of building blocks.
- (3) 4 small cars.
- (4) Jack-in-the-box.
- (5) Paper and box of crayons.
- (6) Carousel (wooden toy which can be spun round).
- (7) Clown on bars.
- (8) Jig-saw.
- (9) Gun.
- (10) 3 hand-puppets.
- (11) Sand-tray.
- (12) Small plastic objects in sand, containers (these could be used as toys in their own right, as well as for sand play).
- (13) 4 cardboard boxes (1 open both ends), also 1 containing 2 of the puppets.

All toys available for the children were placed in a set position in the room, and the identical arrangement of toys was maintained for each subject.

Experimental procedure

Each play session lasted 75 min, all play sessions taking place during the morning. The child was alone in the room, except for the experimenter whom he had met some days earlier when she administered the WISC. In order to reduce any possible experimenter influence, after testing the children were brought to the department randomly by a second experimenter so the likelihood of the experimenter remembering a child's intelligence level during the play session was limited; the social class of the child at this stage was not known by this experimenter.

She brought the child to the play-room ("to play with some other toys") and then told him "Here are the toys; you can play with anything you like, and I'll just be sitting here, working". After this, nothing more was done by the adult to initiate interaction until it was time to leave. She sat with her back to the play situation, and reacted to the child only when a response appeared to be specifically demanded, and at all times kept this reaction to a minimum without being unfriendly. Behaviour which was taken as calling for a response included verbal demands such as "look what I've done", and questions. Noises, as from something being dropped, or to attract attention, which were followed by the child looking or smiling at the experimenter, were greeted non-verbally by smiling. The experimenter remained seated throughout the session and did not join in playing with toys except on rare occasions when there were requests for assistance in a particular task brought to her table. No encouragement was given to the child to play with any specific toy.

Behaviour observations and scoring

Behaviour during the play session was observed through a one-way screen and recorded by an observer who knew nothing about the child. The record was made

on a moving paper tape ($\frac{1}{4}$ in per sec) on a Rustrak recorder, and was later supplemented by the experimenter's report (made during the session) of verbalisations and additional evidence of, for example, imaginative play. The time spent on each activity was then found by measuring the tape. This measurement was to the nearest inch, so that activity was scored in 4 sec units. Exceptions were made in the case of brief pauses during play, and time spent talking; the observer had been instructed to note these by marks made alongside the description of other behaviour. Pauses (C-1: see below) were scored in seconds and for each period of the session this score was converted to 4 sec units. Verbal interactions were timed from the moment the conversation began, through brief pauses (as between sentences) until the child stopped talking to the experimenter. Scores tended to be low and were therefore left in seconds.

On three occasions (a total of 109 min), video-tape records of the child's behaviour were also obtained, the camera being placed beside the observer; and for one complete session, two observers produced independent records on Rustrak recorders. All records were examined blind by the experimenter. Where two records were available for a child, these were compared by a Pearson product-moment correlation coefficient, the comparison being made for those features of activities which were relevant for scoring (the toy played with, the level of constructiveness of the behaviour, and the time in 4 sec units for which the activity lasted).

The responses scored yielded produce-moment coefficients of above 0.83 (video-taped and observer), and 0.97 (two observers). The results of these checks on four separate occasions were considered a satisfactory indication of the observer's reliability, in view of previous more extensive reliability tests of the technique (Kniveton and Stephenson, 1972).

Response measures

"Flitting" or change of activity. This occurred when successive behaviours were unrelated to each other, e.g. sand play changing to kicking a ball, or to looking out of the window. A "flit" was not recorded where there was a gradual shift in activity, e.g. shooting with the gun to shooting with puppet holding gun to playing with puppet alone.

Number of toys. For the toy to be included in this score it must be handled with some attention: "played with". Thus all play at C-0 and some of the play at C-1 (see below) will be with no toys.

Constructiveness

All behaviour in the play situation was categorised according to its level of constructiveness. The scale used is adapted from that used by Noble (1970), but the category scores are not summed as there is no evidence that it is a ratio scale. The assumption Noble (1970) and Barker, Dembo and Lewin (1941) make that 2 min at category 1 is equivalent to 1 min at category 2, does not appear to be warranted. Details of the categories and examples of their use were as follows:

C-0 No attention on any toy.

Attention on room, experimenter, parts of anatomy.

Pause, having abandoned toy and not selected another.

C-1 Attention half on toy.

Just looking at toys (not preparatory to normal play).

Pause in play, e.g. for looking round, talking to experimenter, without abandoning toy.

Interest in toys so slight that no real play, e.g. fiddling with but not looking at puppet while walking round the room, looking out of the window; running fingers through sand while making faces in mirror.

C-2 Attention fully on toy: normal play.

Conventional use of single toy. Investigating toy, how it works, etc.: looking and touching. Use of toy and simple commentary on, e.g. how toy is working.

Talking to toy but not on any imaginative topic, e.g. "Hello Jack-in-the-box. Ooh, you frightened me that time; go back down".

Demonstrating or pointing out feature of toy to experimenter.

Clearing up.

C-3 Attention fully on toy: elaborated or imaginative play.

Use of more than one kind of toy where attention on both toys, i.e. one is more than a background for other, e.g. cars on "racing track" made in sand (but where the sand has not been, e.g. smoothed into an appropriate form and is merely treated as an extension of the floor, the play is C-2).

Play within an imaginative framework, e.g. with head through cardboard box, being the weather forecast man on television; containers in the sand are ships in a snowstorm.

Scientific endeavour: finding out what happens when . . . , e.g. testing Jack-in-the-box to see what will stop the lid opening properly.

Fifty different instances of behaviour including all aspects of the categories described above and a large proportion of borderline cases were classified by the experimenter (10: C-0, 13: C-1, 15: C-2, 12: C-3) and then presented, unmarked and randomly arranged to 6 judges, together with the details of the categories given above. The categorizers were asked to rate the activities, working independently. On average 95.0 per cent of their ratings were in agreement with those made by the experimenter. Disagreements were discussed by experimenter and judges in the light of further information about the child's play immediately before and after the specific instance of behaviour. In each case this extra information allowed agreement to be reached.

Verbalisations

These were classified according to the topic of conversation.

Total time spent in verbal interactions with adult.

Time in toy-related verbalisations:

- (a) Comments and conversation about toys.
- (b) Requests for attention.
- (c) Requests for assistance.
- (d) Requests for information.

Time in non-toy-related verbalisations:

- (a) Comments and conversation about the play situation.
- (b) Comments and conversation not relating to the play situation.

(c) Comments and conversation opposed to the play situation.

(d) Requests for attention when not playing.

Number of instances when comments were made which expressed dissatisfaction.

Treatment of data

In order to examine the development of play patterns throughout the session, the total 75 min was divided into 15-min periods and the first of these subdivided into 5 min periods (as it was anticipated that there would be some changes within this initial 15 min). Scores were computed for each group of children on each of the measures of behaviour, for each period. A 3-way analysis of variance was carried out comparing the effects of social class, intelligence and time on the measures of behaviour.

RESULTS

Development of interest

(a) The amount of flitting did not differ significantly for the two social classes ($F = 1.9$, $d.f. = 1, 12$).

(b) The mean number of toys played with (see Table 2) during each 15 min period was greater for middle-class (5.5 toys) than for working-class (4.3) ($F = 24.88$, $d.f. = 1, 12$, $p < 0.001$). This contrary to hypothesis.

(c) Class alone did not significantly affect the time spent at C-0 ($F = 0.4$, $d.f. = 1, 12$).

Mean C-0 scores change significantly ($p = < 0.05$) with time, and this effect differs significantly ($p = < 0.025$) for the different classes. (See results 3 Boredom.)

During the first 15 minutes of the session, the effects of class and intelligence differences interacted significantly on C-0 scores ($F = 7.07$, $d.f. = 2, 12$, $p < 0.01$).

TABLE 2. RANGE SCORES FOR THE NUMBER OF CHANGES OF ACTIVITY AND THE NUMBER OF DIFFERENT TOYS PLAYED WITH DURING EACH PERIOD OF THE SESSION BY THE DIFFERENT GROUPS OF CHILDREN

Social class	I.Q. group	Period of session (min)									
		1-5	6-10	11-15	1-15	16-30	31-45	46-60	61-75	1-75	
Middle-class	High (<i>N</i> = 3)										
		"Flits"	1-5	5-7	0-6	11-13	8-16	3-10	5-11	1-14	31-50
		Toys	2-4	4-6	1-5	6-8	6-7	5-8	6-7	4-6	9-11
	Average (<i>N</i> = 3)										
		"Flits"	0-4	0-11	0-14	0-30	3-14	2-12	3-19	4-7	28-62
		Toys	1-5	1-6	1-6	1-8	4-8	3-5	4-7	4-6	9-10
Working-class	Low (<i>N</i> = 3)										
		"Flits"	2-8	1-9	4-7	7-19	3-6	4-19	3-10	1-13	23-55
		Toys	2-5	2-6	3-5	4-9	2-7	6-9	4-5	1-7	8-12
	High (<i>N</i> = 3)										
		"Flits"	1-8	0-5	0-4	8-10	5-15	2-3	4-10	1-5	27-37
		Toys	2-6	1-6	1-4	6-7	4-8	2-3	3-6	2-4	9-10
Working-class	Average (<i>N</i> = 3)										
		"Flits"	3-6	0-5	2-3	5-14	0-13	0-11	2-15	0-5	19-43
		Toys	2-4	1-4	2-3	4-7	1-6	1-5	2-7	1-4	8-9
	Low (<i>N</i> = 3)										
		"Flits"	0-9	0-4	0-0	0-10	8-15	0-16	0-6	5-9	32-40
		Toys	1-6	1-4	1-2	1-6	5-7	2-6	1-5	4-6	8-10

The C-0 scores for the different intelligence groups of the two classes are depicted in Fig. 1.

(d) Class alone did not significantly affect the time spent at C-1. During the first 15 mins, however, C-1 scores varied over successive 5 min periods ($F = 4.33$, $d.f. = 2, 24$, $p < 0.025$ Fig. 2), with the trends for working-class and middle-class differing significantly ($F = 20.60$, $d.f. = 2, 24$, $p < 0.001$ Fig. 3). The trends also differ for different intelligence groups ($F = 10.35$, $d.f. = 4, 24$, $p < 0.001$ Fig. 3), and here again social class interacts significantly with the other factors ($F = 4.85$, $d.f. = 4, 24$, $p < 0.01$ Fig. 4).

Constructiveness of play

Class alone did not significantly affect the time spent at C-3 ($F = 0.1$, $d.f. = 1, 12$). It did interact with the effects of intelligence and time ($F = 3.38$, $d.f. = 8, 48$, $p < 0.005$) in a complex way shown in Fig. 6. The effect of time on C-3 scores (see Table 3) was also significantly different for the different intelligence groups of the combined social classes ($F = 2.25$, $d.f. = 3, 48$, $p < 0.05$ Fig. 5). A marked feature is the high proportion of time spent by all children in normal play—C-2, the variables of social class, intelligence and time playing having no significant effect on play at this level.

Boredom

(a) As anticipated, C-0 scores increased significantly as the session proceeded ($F = 4.50$, $d.f. = 4, 48$, $p < 0.005$). This effect is illustrated in Fig. 7. The trends in C-0 scores differed for the different classes ($F = 3.16$, $d.f. = 4, 48$, $p < 0.025$), but there was no clear-cut effect of class on time spent at C-0.

(b) C-1 scores did not change significantly over the 15-min periods of the session ($F = 0.3$, $d.f. = 1, 12$).

No change in the amount of flitting, or the number of toys played with, occurred over successive 15 min periods of the session (flitting: $F = 2.0$, $d.f. = 4, 48$; toys: $F = 1.0$, $d.f. = 4, 48$). The significant increase in the amount of verbalising as the session proceeded (see below) could be related to boredom, and thus will be discussed later.

Verbal interaction

As predicted, the mean time spent talking to the experimenter was significantly greater for middle-class children (157.1 sec) than for working-class (15.4 sec) ($F = 5.64$, $d.f. = 1, 12$, $p < 0.05$). The verbalising score for all children (see Table 4) changed over successive 15 min periods of time as illustrated in Fig. 8 ($F = 3.46$, $d.f. = 4, 48$, $p < 0.05$ Fig. 8). Significant effects were also found for particular kinds of verbalisation. Non-toy-related verbalisation scores changed over successive 15 min periods ($F = 3.90$, $d.f. = 4, 48$, $p < 0.01$ Fig. 9), with the trends being significantly different for different classes ($F = 3.05$, $d.f. = 4, 48$, $p < 0.05$ Fig. 9).

DISCUSSION

The development of interests

The experimental results do not indicate that middle-class children develop more interest than working-class, if interest is to be depicted by a lower flitting

TABLE 3. RANGE SCORES IN 4 SEC UNITS, FOR TIME SPENT AT LEVELS 0, 1, 2, 3 OF CONSTRUCTIVENESS DURING EACH PERIOD OF THE SESSION, BY THE DIFFERENT GROUPS OF CHILDREN, $N = 3$

Social class	I.Q. group	*	Period of session (min)								
			1-5	6-10	11-15	1-15	16-30	31-45	45-60	61-75	1-75
Middle-class	High	0	0-0	0-5	0-0	0-5	0-21	0-64	0-87	0-32	14-209
		1	0-0	0-9	0-10	0-19	3-8	0-14	3-9	4-10	20-55
		2	64-75	57-66	40-73	168-214	113-217	33-219	43-214	182-193	539-1057
	3	0-11	4-11	0-35	4-57	3-104	6-190	0-159	0-39	25-549	
	Average	0	0-1	0-0	0-2	0-3	2-5	0-10	23-28	2-13	34-51
		1	0-4	0-1	0-17	4-17	2-15	0-41	0-24	0-61	10-158
		2	35-74	0-75	51-61	96-205	76-205	27-176	171-187	41-203	411-916
	Low	3	0-36	0-75	0-14	0-125	0-141	0-198	0-23	0-171	213-658
		0	0-6	0-0	0-7	2-7	0-4	5-48	14-132	14-69	47-251
		1	0-4	0-0	0-0	00-4	0-0	0-12	0-1	0-0	0-17
2		69-73	75-75	68-75	216-219	68-221	163-208	57-208	109-194	726-1047	
Working-class	High	3	0-0	0-0	0-0	0-0	0-157	2-18	0-105	17-70	29-350
		0	0-1	0-1	0-2	0-2	0-13	2-3	3-16	0-2	13-21
		1	0-8	0-41	0-17	0-58	0-20	0-15	0-19	0-0	0-79
	2	67-75	33-75	58-75	165-223	192-208	207-223	69-198	52-154	823-877	
	3	0-0	0-0	0-0	0-0	3-17	0-3	22-140	71-173	201-232	
	Average	0	0-4	0-4	0-3	3-7	0-13	2-8	6-13	0-43	21-73
		1	0-15	0-30	0-0	2-15	0-1	0-11	0-11	0-1	8-48
		2	57-73	45-73	46-75	184-203	185-225	192-221	201-209	181-225	959-1056
	Low	3	0-2	0-0	0-26	0-28	0-26	0-21	0-10	0-0	0-85
		0	0-0	0-0	0-0	0-0	0-89	0-16	0-25	3-115	5-245
1		2-60	0-39	0-9	2-108	0-73	0-25	0-4	3-7	9-210	
2		15-75	0-75	0-75	66-225	63-222	19-179	0-205	153-201	405-984	
3	0-7	0-75	0-75	0-157	0-101	25-206	5-224	0-18	33-706		

* Level of constructiveness.

TABLE 4. RANGE SCORES IN SECONDS, FOR THE TOTAL TIME SPENT IN CONVERSATION AND ALSO FOR TOY-RELATED AND NON-TOY-RELATED COMPONENTS DURING EACH PERIOD OF THE SESSION BY THE DIFFERENT GROUPS OF CHILDREN, $N = 3$

Social class	I.Q. groups	Type of conversation	Period of session (min)								
			1-5	6-10	11-15	1-15	16-30	31-45	45-60	61-75	1-75
Middle-class	High	Total	0-15	0-7	0-31	0-49	0-74	0-74	0-144	0-71	0-413
		Toy-related	0-15	0-7	0-31	0-45	0-51	0-54	0-87	0-51	186-212
		Non-toy-related	0-0	0-4	0-0	0-4	0-23	0-20	0-134	0-23	0-213
	Average	Total	0-8	0-8	0-17	0-33	0-7	0-25	0-70	0-21	0-111
		Toy-related	0-8	0-4	0-17	0-27	0-7	0-10	0-4	0-16	0-46
		Non-toy-related	0-0	0-6	0-0	0-6	0-0	0-15	0-70	0-5	0-75
Working-class	High	Total	0-134	0-10	0-14	0-152	0-21	0-57	0-164	0-62	0-426
		Toy-related	0-127	0-10	0-14	0-145	0-21	0-23	0-102	0-62	0-346
		Non-toy-related	0-7	0-0	0-0	0-7	0-0	0-45	0-62	0-2	0-77
	Average	Total	0-0	0-0	0-0	0-0	0-6	0-9	0-39	0-42	0-96
		Toy-related	0-0	0-0	0-0	0-0	0-0	0-9	0-26	0-42	0-77
		Non-toy-related	0-0	0-0	0-0	0-0	0-6	0-0	0-13	0-0	0-19
Low	High	Total	0-0	0-0	0-0	0-0	0-0	0-10	0-8	0-13	0-31
		Toy-related	0-0	0-0	0-0	0-0	0-0	0-0	0-3	0-9	0-12
		Non-toy-related	0-0	0-0	0-0	0-0	0-0	0-10	0-5	0-4	0-19
	Average	Total	0-0	0-0	0-0	0-0	0-0	0-2	0-2	0-2	0-6
		Toy-related	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
		Non-toy-related	0-0	0-0	0-0	0-0	0-0	0-2	0-2	0-2	0-6

score or by fewer toys being played with. That the number of different toys played with during an average 15 min period should be significantly larger for middle-class children is unexpected in view of Kniveton and Stephenson's finding (1972). It seems unlikely that the different length of the play session could cause this discrepancy, since the present study revealed no significant changes in the number of toys used during successive 15 min periods. This finding is partly accounted for by the fact that more middle-class children than working-class children played with toys such as boxes and containers with little obvious play potential. One possible explanation for this is offered by the work of Bernstein and Young (1967) showing differing social class parental attitudes towards play.

Examination of C-0 scores in the first 15 min period of the session shows that lack of interest in the toys, or, alternatively, interest in other aspects of the situation, is greatest for working-class children of average intelligence and middle-class children of low intelligence. It might be assumed from Bernstein's work that middle-class children would show more interest in toys, and from everyday experience that more intelligent children would show more interest (boredom would be most unlikely to have set in during this initial period). The summed contribution from these factors could account for all features of Fig. 1 except the recovery of interest

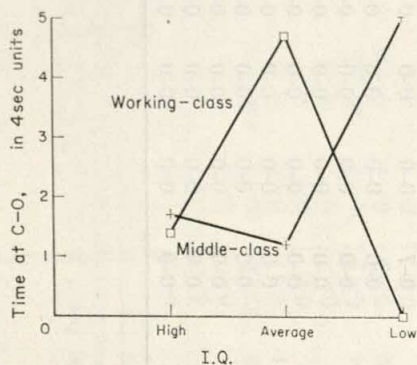


FIG. 1. Social class and intelligence at C-0 (during first 15 min).

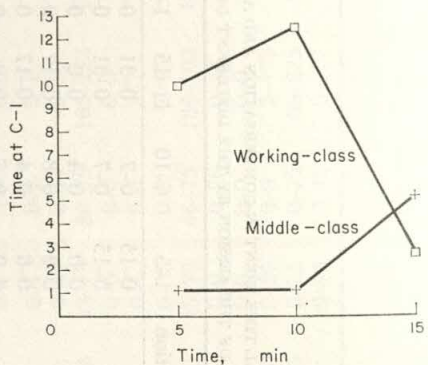


FIG. 2. Social class and time at C-1 (in 4 sec units).

shown in low intelligence working-class children; one could perhaps say that they were not sufficiently concerned with the rest of the situation to be distracted from the toys: they were prepared to accept events as they found them and absorb themselves in play. The class-intelligence interaction does not remain significant over the whole session.

Significant differences in C-1 scores during the first 15 min are shown in Figs. 2-4. Over successive 5-min periods, the time spent at C-1 increases a little and then falls off (Fig. 2). This trend is largely due to the contribution from working-class children, for whom the effect is very marked. Initial involvement with the toys seems to give way to a time of less absorption in which the situation may be reviewed and toys are considered without the child committing himself to any of them in particular. Play is then resumed with greater involvement than before. For middle-class children, initial interest lasts longer and the increase in C-1 time comes during

the last 5 min. As C-1 indicates "half-involvement" a rather indefinite attitude towards the toys, one might expect behaviour to shift fairly rapidly from this category to C-0 or C-2; it is interesting to see that the high C-1 scores for working-class children are not maintained during the rest of the session (the scores are in fact at their maximum for min 1-15 for all three working-class intelligence groups). Presumably as time passes, the working-class children attain the more decided attitude shown by the middle-class and their C-1 scores come to have similar values:

TABLE 5. AVERAGE TIME (IN 4 SEC BLOCKS) SPENT AT C-1

	First 15 min	Other periods (average)
Middle-class	7.1	6.4
Working-class	25.5	6.6

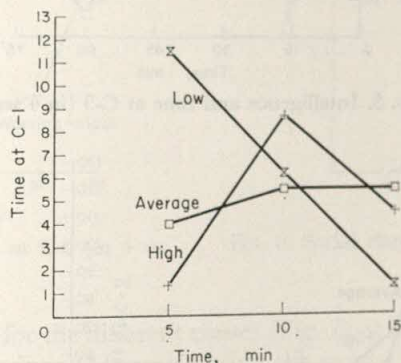


FIG. 3. Intelligence and time at C-1 (in 4 sec units).

The effect of intelligence on the way time spent at C-1 changes through the first 15 min of the session (Fig. 3) again appears to be more a reflection of working-class than of middle-class scores (Figs. 4a and 4b) until the initial interest of middle-class children fades and C-1 scores rise to mask the effect for working-class.

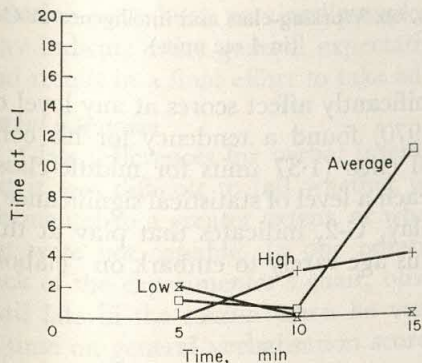


FIG. 4a. Middle-class and intelligence at C-1 (in 4 sec units).

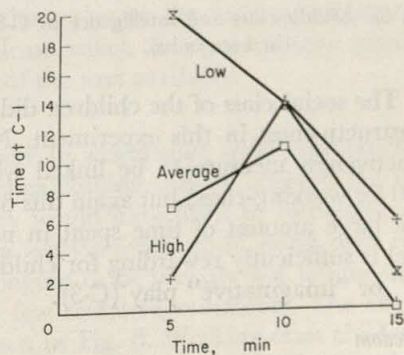


FIG. 4b. Working class and intelligence at C-1 (in 4 sec units).

Constructiveness of play

Difficulty arose in accounting for C-3 scores (Figs. 5, 6a and 6b), in this case due to the great variety of curve shapes. A possible explanation could be that the time spent at this highest level of constructiveness is particularly influenced by the "creativity" or "originality" of the individual child.

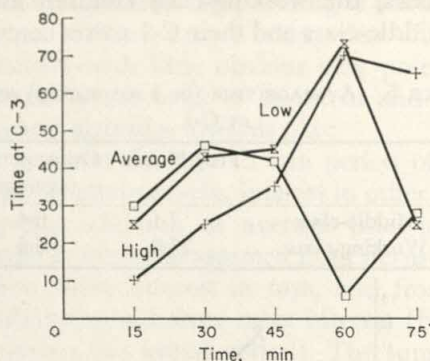


FIG. 5. Intelligence and time at C-3 (in 4 sec units).

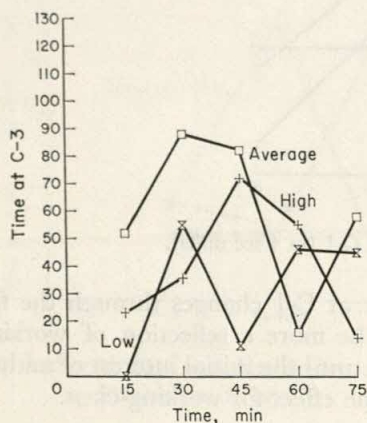


FIG. 6a. Middle-class and intelligence at C-3 (in 4 sec units).

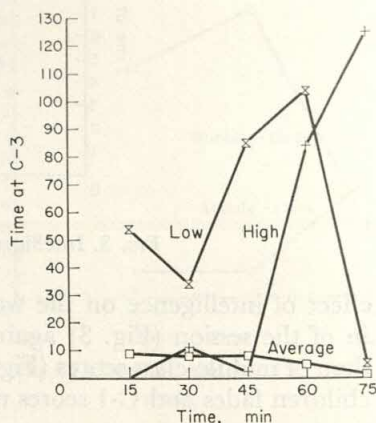


FIG. 6b. Working-class and intelligence at C-3 (in 4 sec units).

The social class of the children did not significantly affect scores at any level of constructiveness in this experiment. Noble (1970) found a tendency for his constructiveness measure to be linked with social class (1.37 units for middle-class: 1.00 for working-class) but again this did not reach a level of statistical significance). The large amount of time spent in normal play, C-2, indicates that play at this level is sufficiently rewarding for children of this age rarely to embark on "elaborate" or "imaginative" play (C-3).

Boredom

The effect of time on C-0 scores for different classes (whole session) is illustrated in Fig. 7. As the session proceeds, there is a general decrease in the amount of time

devoted to the toys; boredom seems to set in after the first 15 min, and gradually increases. The child may play with his fingers, slide on the floor, look out of the window or in the mirror, watch the experimenter and so on, but there is really very little to do in the situation, but for the majority of children play does not cease altogether. The complex cessation of play tended to be coupled with signs of distress and a desire to leave. Whether the desire to leave or boredom with the toys occurs first may vary with the child.

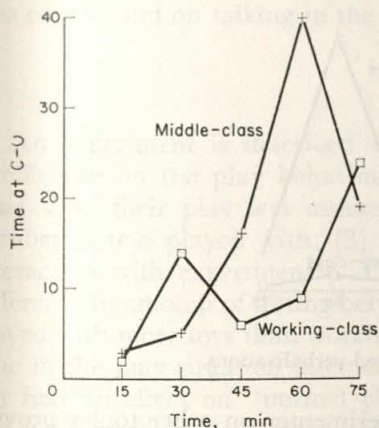


FIG. 7. Social class and time at C-0 (in 4 sec units).

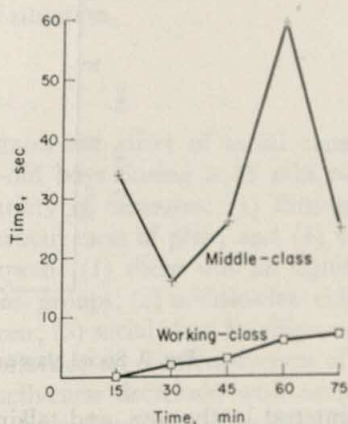


FIG. 8. Social class and general verbalizations.

Looking at C-0 scores for the different classes (Fig. 7), it can be seen that working-class children showed a minor C-0 peak during the second 15 min. Once boredom has really set in, the rate at which it increases is very similar for different classes (as can be seen in middle-class periods 16-30, 31-45, 46-60; working-class 31-45, 46-60, 61-75). After reaching their "boredom peak", the middle-class children become rather more involved with the toys again. Possibly children can only do nothing for a limited time within a certain period, and this time is approached during the 46-60 min period of the session; alternatively the non-toy aspects of the situation have been maximally exploited by this stage; or the recovery of interest may indicate some general expectation of release which increases as time elapses and results in a final effort to take advantage of the toys available.

Verbal interaction

Class differences for verbal interactions were in accordance with expectations, but it was difficult to tell whether working-class children simply ignored the experimenter to a greater extent, or whether they would have liked to communicate but were not capable. In one notable case a working-class child hung over the back of the experimenter's chair, obviously longing to be friendly but tongue-tied until late in the session when he ventured a few tentative comments. The effect of time on general verbalisation scores is shown in Fig. 8. Working-class children gradually came to talk a little more as the session progresses and the situation presumably becomes less intimidating and more familiar, but their verbalisation

scores are still well below those for middle-class children. The trends in verbalisation scores for combined classes thus largely reflect those for middle-class children. The fall in scores during period 16–30 min is probably due to the dying down of excitement aroused by the novelty of the situation. The fourth period (46–60 min) peak for general verbalisations can be seen (Fig. 9) to be mainly due to the non-toy-related verbalisations of middle-class children. It seems that these children have

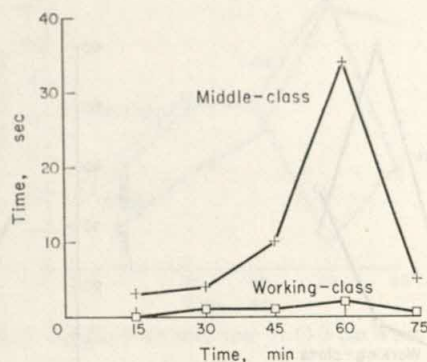


Fig. 9. Social class and non-toy-related verbalizations.

lost interest in the toys, and talking to the experimenter on other topics provides an alternative occupation. The working-class children do not make conversation in the same way and spend significantly less time talking about the play situation: features of the room, the view from the window and so on. The drop in the non-toy-related verbalisations of middle-class children in min 61–75 is coupled with decreased C-0 scores, reflecting some recovery of interest in the toys.

The other significant effect for verbalisations is found for toy-related verbalisations which are requests for assistance, where the experimenter's help is needed in usually practical tasks such as making toys work or holding something to steady it (the category being distinct from requests for information: asking how a toy worked, asking for facts, etc.). The only group requesting assistance was the low intelligence middle-class group. Children of higher intelligence appear to be able to manage by themselves, and those from working-class backgrounds are probably more accustomed to looking after themselves and would not be in the habit of asking help from a relative stranger, even when in difficulties.

CONCLUSIONS

The experimental results show that interest in play as measured by amount of flitting is not affected by social class, intelligence and time, but that these factors do influence the constructiveness of play in a complex manner. The most marked feature of the results was that all children spent a great proportion of their time at normal play (C-2). "Elaborate" or "imaginative" play rarely occurred and no definite trends in this type of behaviour were observed.

Boredom as depicted by lack of interest in the toys is influenced by social class—as hypothesised working-class children reached an earlier boredom peak than

middle-class children—but the fact that the children were restricted to the experimental situation complicated the issue as there was little alternative to playing with the toys: the middle-class children soon exhausted other activities and returned to the toys. This is supported by an appropriate change in verbalisations from non-toy to toy-related conversation.

These results highlight the effects of social class (Kniveton and Stephenson, 1972) and intelligence with particular reference to length of experience in the play situation. The major effect of these variables seems to be upon low-level constructiveness of play and on talking in the experimental situation.

SUMMARY

An experiment is described which investigates the effect of social class and intelligence on the play behaviour of 5½-year-old boys during a 75 min period. Interest in their play was assessed using a variety of measures: (1) flitting; (2) number of toys played with; (3) level of constructiveness of play; and (4) verbal interaction with experimenter. The results showed: (1) there was no significant difference in amount of flitting between social class groups; (2) middle-class children played with more toys than working-class children; (3) social class, intelligence and time in the play situation interacted in their influence on constructiveness of play but had no effect on "normal play". Constructiveness decreased with time and was interpreted as a symptom of boredom; (4) as predicted, middle-class children talked with the experimenter more than working-class children.

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COGNITIVE CHANGES IN THE ADOLESCENT SLOW LEARNER

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DURING the past twenty-five years a considerable amount of work has been reported on changes in cognitive level of persons initially judged to be subnormal. Many of these studies have been concerned with subjects from deprived environments (Bourne, 1955; Skeels and Harms, 1948; Skodak and Skeels, 1949). The studies of Clarke and Clarke (1954) and Clarke, Clarke and Reiman (1958) are particularly important because they concern intelligence changes in institutionalized adolescents and adults. The studies indicated that adolescents removed from "adverse" homes, as defined by specific criteria (Clarke and Clarke, 1954), showed greater increments in intelligence during their teens and twenties than subjects from environments described as "less adverse". The subjects were no longer living with their families and had been removed to an institution. The work cited above also showed that intellectual growth in the individual case is not necessarily a linear function of time and can continue into adult life.

The results are consistent with the contention that deprived individuals who do not show growth spurts in the early years of life may show compensatory growth during their teens. Bloom (1964) has suggested that, in order to maximize growth changes, appropriate environmental stimuli should be applied during the periods of maximum growth.

The present paper is concerned with an examination of growth patterns in adolescents who are regarded as slow learners. Clarke and Clarke (1954) argued that changes in intelligence during the teens and early twenties were directly related to removal from "adverse" home conditions. The work of Widdowson and McCance (1954) also suggests that removal of conditions of mild malnutrition is associated with compensatory increases in physical growth. Bloom's (1966) work suggests that compensatory growth changes may occur when primary growth changes are inhibited. It seems possible that this may occur regardless of the individual's change in environment. Both hypotheses are tenable and not necessarily mutually exclusive.

It has been suggested for some time that persons who come from poor socioeconomic backgrounds and are below average in intelligence, tend to obtain greater scores on Performance than Verbal I.Q. tests, (Bernstein, 1958). Some workers, such as Marks and Klahn (1961) have not confirmed this, though Wyatt (1965) showed that institutionalized subnormals from "adverse" home backgrounds have higher Performance than Verbal I.Q.s on the WAIS (Wechsler, 1955).

The present study provides an opportunity to examine any cognitive growth

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changes which may occur in adolescents who are not removed from their home environment. The following questions were asked:

- (1) Do adolescent slow learners who remain in their home environment show increments in intelligence?
- (2) Do subjects from "adverse" homes show greater increments than those living in "less adverse" homes? (for definition see below).
- (3) Are specific variations in Verbal and Performance scores associated with particular home environments? For example, is low Verbal intelligence associated with subjects living in adverse conditions?

METHOD

The present research forms part of a longitudinal growth study into the characteristics and behaviour of school-leavers from educationally subnormal (E.S.N.) and special classes of secondary and comprehensive schools. The study took place over three years and the first assessments were made during the individual's last term of school. The time allotted to cognitive assessment was restricted, since other measures of behaviour had to be taken during the limited interview time of approximately one hour. This limitation was imposed because of fatigue factors associated with every interview, and because there was a need to minimize drop-out from the study during the three years of the project. The WAIS was used, but in order to minimize the amount of time spent on this test the shortened version suggested by Maxwell (1960) was employed. This capitalizes on those sub-tests believed to be highly associated with Verbal intelligence and with Performance ability, and are:

Verbal scale Comprehension, Similarities, Vocabulary.

Performance scale Block Design, Object Assembly.

The scores on these two sets of sub-tests were prorated to give Verbal and Performance I.Q.s. Instructions were given according to the manual although the accepted English equivalents were adopted.

The psychologists carrying out assessments were checked for standard administration in order to ensure minimal error arising from differences in test presentation. Test forms were scored by the psychologists administering the test and independently by one other psychologist. Disagreements in scoring were arbitrated by the author. The psychologists were not provided with access to previous psychometric results when cognitive measurement took place. They were also unaware of the social histories of the individuals; such data were collected independently by social workers attached to the project. However, some contamination was possible since a few cognitive assessments took place within the subjects' homes. The allocation of psychologists to subjects from one year to another was random. The rating of "adverse" or "less adverse" home conditions was made by applying Clarke and Clarke's (1954) twelve criteria. These criteria were: N.S.P.C.C. intervention, parental attitude antagonistic, no fixed abode, "Fit Person" Order, home conditions bad, considerable neglect, irregular school attendance due to neglect, home dirty and neglected, gross poverty, crime in parents, rickets, child found begging. Homes involving two or more criteria were classified as "adverse" and

those with one or zero criteria were regarded as "less adverse". The ratings were carried out independently of social workers and psychologists engaged in the study.

Subjects were tested each year for a total of three years. Thirty-four subjects were below the test norms at initial testing (i.e. 16.00 yr) but they were fairly equally distributed among "adverse" and "less adverse" groups. However, the WAIS was used in all cases in order to standardize test administration. Where the person's age was below the standardization sample, scores were obtained by means of extrapolation. This may have lead to some error, but it alleviates the complexities of attempting to compare changes in score between Wechsler Children and Adult Intelligence Scales.

SUBJECTS

The subjects were male and attended either, (1) a school for Educationally Subnormal boys, (2) a Secondary school for boys situated in a deprived area of the city, or (3) a modern Comprehensive school. They consisted of all children regarded as educationally subnormal, and who would leave the schools concerned for employment during the first year of the study, with the following exceptions; (i) children who had experienced any form of institutionalization; (ii) children who could not be assessed on all three test occasions.

"Educationally Subnormal" was defined as children who, at time of admission to the school or class, were more than two years behind the average for their age in terms of reading or arithmetic, and, in the opinion of the educational psychologist, teacher, and generally, the school medical officer, were handicapped to such a degree that special teaching was required. The children were also below average in intelligence. Details of number, age, and intelligence quotients at initial and final testing are shown in Table 1. All subjects were living within their own homes at the time of the study.

RESULTS

The data from the special school were initially analysed on their own. Other schools were then included so that a cumulative analysis could be made. Separate analysis for all schools was not possible because of the small sample size in some categories. Significance levels are given in terms of 1 tail-tests, as direction of differences had been predicted. Some relevant characteristics of the school groups are described below:

- (a) The special school sample is of particular interest because in terms of intelligence level and type of handicap involved it most resembles Clarke's institutional sample. Even so, the present subjects are about five years younger on average than Clarke's at the beginning of the survey and more homogenous in terms of intelligence.
- (b) Both the special school and boys' secondary school were in deprived areas of the city and were in old and inadequate buildings.
- (c) The modern comprehensive schools were situated in new areas of city development, and the majority of the children came from "less adverse" homes.

TABLE 1. AGE AND I.Q. SCORES OF SUBJECTS

Group	Home condition	N	Age at 1st year	V_1	V_2	P_1	P_2
(a) Special school	Adverse	16	$\bar{X}$ 16.1	73.7	77.6	84.4	91.3
		(6)*	SD 0.4	8.8	8.7	18.3	19.1
	Less adverse	15	16.0	78.0	80.3	81.0	84.9
		(8)	0.4	11.3	14.7	20.3	22.2
(b) Special and secondary school combined	Adverse	23	15.8	74.7	80.5	87.7	95.1
		(12)	0.6	9.9	9.8	16.4	17.7
	Less adverse	20	15.7	80.5	83.3	83.9	90.4
		(13)	0.7	12.9	14.4	19.0	22.2
(c) Special, secondary and comprehensive schools combined	Adverse	24	15.8	75.6	81.3	88.1	95.6
		(13)	0.6	10.7	10.3	16.2	17.5
	Less adverse	29	15.6	81.8	85.6	85.0	95.9
		(21)	0.6	12.1	13.2	18.0	21.1

* Figures in brackets indicate those below the age Norms at initial testing.

The results are summarized in Tables 2 and 3. In the case of the special school they indicate that children from "adverse" homes showed significant increases in Verbal and Performance intelligence quotients over the three years. Those from "less adverse" homes did not show a significant rise in Verbal I.Q. but a significant change was obtained in Performance scores between years one and three.

A comparison of I.Q. increments between the two categories ("adverse" and "less adverse") shows no significant differences in Verbal I.Q. but a significant difference in Performance scores favouring a greater increase in the group from "adverse" home conditions, ($t_{29} = 1.83, p < 0.05$ yr 1 cf. 2).

Subjects who were assessed on two out of the three test occasions showed even greater increments between years 1 and 2, and 1 and 3 for the "adverse" home group. Although the data are not presented here, they support Clarke and Clarke's contention that subjects who remain accessible throughout such studies represent the less promising members of the original group. Drop-outs are likely to have been absorbed into the community, and probably show even greater advances in cognitive development.

Similar results were obtained when (a) the Secondary, and (b) the Comprehensive schools were included in the analysis. Significance levels relating to change are found throughout the "adverse" home group comparisons and significant differences in Performance scores, though of lower magnitude, are also found in the "less adverse" home group. A rise in Verbal I.Q. in the total group from the "less adverse" home appears to be largely due to changes in scores in subjects attending comprehensive school. A t value of 2.5 reaches beyond the 0.05 level of

TABLE 2. *t*-TEST COMPARISON OF I.Q. SCORES FOR SUBJECTS LIVING IN DIFFERENT ENVIRONMENTS

		Less adverse			Adverse			Less adverse			Adverse		
		V_1V_2	V_1V_3	V_2V_3	V_1V_2	V_1V_3	V_2V_3	P_1P_2	P_1P_3	P_2P_3	P_1P_2	P_1P_3	P_2P_3
Special school	<i>t</i>	0.36	0.88	0.84	1.84	2.70	0.76	1.21	1.92	0.78	3.63	2.40	0.49
	<i>df.</i>	14	14	14	15	15	15	14	14	14	15	15	15
	<i>p</i>	n.s.	n.s.	n.s.	<0.05	<0.01	n.s.	n.s.	<0.05	n.s.	<0.005	<0.025	n.s.
Special and secondary schools	<i>t</i>	1.57	1.33	0.03	3.33	3.82	0.26	2.43	3.13	1.14	3.26	3.55	1.55
	<i>df.</i>	19	19	19	22	22	22	14	14	14	22	22	22
	<i>p</i>	n.s.	n.s.	n.s.	<0.0005	<0.0005	n.s.	<0.025	<0.005	n.s.	<0.005	<0.005	n.s.
Special, secondary and comprehensive schools	<i>t</i>	2.67	2.27	1.16	3.37	3.87	0.03	3.44	5.05	2.85	1.21	3.72	1.41
	<i>df.</i>	28	28	28	23	23	23	28	28	28	23	23	23
	<i>p</i>	<0.01	<0.025	n.s.	<0.005	<0.0005	n.s.	<0.005	<0.0005	<0.005	<0.0005	<0.005	n.s.

TABLE 3. VERBAL-PERFORMANCE DIFFERENCES IN THE ADVERSE AND LESS ADVERSE HOME GROUPS

	Less adverse			Adverse		
	V_1P_1	V_2P_2	V_3P_3	V_1P_1	V_2P_2	V_3P_3
Special school						
<i>t</i>	1.06	0.95	0.82	2.82	3.57	3.09
<i>d.f.</i>	14	14	14	15	15	15
<i>p</i>	n.s.	n.s.	n.s.	<0.01	<0.005	<0.005
Special and secondary school						
<i>t</i>	1.02	0.83	0.84	4.07	5.20	4.40
<i>d.f.</i>	19	19	19	22	22	22
<i>p</i>	n.s.	n.s.	n.s.	<0.0005	<0.0005	<0.0005
Special, secondary and comprehensive schools						
<i>t</i>	1.07	1.29	2.47	4.05	5.17	4.46
<i>d.f.</i>	28	28	28	24	24	24
<i>p</i>	n.s.	n.s.	0.02	<0.0005	<0.0005	<0.0005

significance for comprehensive school subjects from "less adverse" homes (V_1 cf. V_2).

In the combined special and secondary school group the Performance I.Q. increments in subjects from, (a) "adverse", and (b) "less adverse" homes, show a significant difference in favour of the former ($t_{41} = 1.80$, $p < 0.05$ yr 1 cf. 2).

The following figures indicate the extent of increments in the various groups from year 1 to 3:

Special School Group

Verbal I.Q.

"Adverse" Home Group: $N = 16$. $\bar{X} = +3.9$ I.Q. points
Range: - 6 to + 17.

2 Ss showed increments of 10 points or more.

1 S showed an increment of 15 points or more.

"Less adverse" Home Group: $N = 15$. $\bar{X} = +2.3$ I.Q. points
Range: - 13 to + 22.

3 Ss showed increments of 10 points or more.

3 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

Performance I.Q. "Adverse" Home Group: $N = 16$. $\bar{X} = +6.9$ I.Q. points
Range: - 9 to + 22.

5 Ss showed increments of 10 points or more.

4 Ss showed increments of 15 points or more.

"Less adverse" Home Group: $N = 15$. $\bar{X} = +3.9$ I.Q. points
Range: - 11 to + 16.

2 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

Special and Secondary Group

Verbal I.Q. "Adverse" Home Group: $N = 23$. $\bar{X} = +5.8$ I.Q. points

Range: -6 to $+21$.

5 Ss showed increments of 10 points or more.

3 Ss showed increments of 15 points or more.

1 S showed a decrement of 15 points or more.

"Less adverse" Home Group: $N = 20$. $\bar{X} = +2.8$ I.Q. points

Range: -13 to $+22$.

4 Ss showed increments of 10 points or more.

4 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

Performance I.Q. "Adverse" Home Group: $N = 23$. $\bar{X} = +7.4$ I.Q. points

Range: -14 to $+29$.

9 Ss showed increments of 10 points or more.

6 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

"Less adverse" Home Group: $N = 20$. $\bar{X} = +6.5$ I.Q. points

Range: -11 to $+25$.

6 Ss showed increments of 10 points or more.

4 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

Total Group

Verbal I.Q. "Adverse" Home Group: $N = 24$. $\bar{X} = +5.7$ I.Q. points

Range: -6 to $+21$.

5 Ss showed increments of 10 points or more.

3 Ss showed increments of 15 points or more.

"Less adverse" Home Group: $N = 29$. $\bar{X} = +3.8$ I.Q. points

Range: -13 to $+22$.

8 Ss showed increments of 10 points or more.

6 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

Performance I.Q. "Adverse" Home Group: $N = 24$. $\bar{X} = +7.5$ I.Q. points

Range: -14 to $+22$.

9 Ss showed increments of 10 points or more.

6 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

"Less adverse" Home Group: $N = 29$. $\bar{X} = +10.9$ I.Q. points

Range: -11 to $+39$.

14 Ss showed increments of 10 points or more.

11 Ss showed increments of 15 points or more.

1 S showed a decrement of 10 points or more.

There appear to be no significant differences between Verbal and Performance scores in children from the "less adverse" home backgrounds, with the exception of the comprehensive school group, where a large increase in Performance I.Q. during

the study ($t_3 = 5.84$, $p < 0.001$) is associated with a statistically significant discrepancy between Verbal and Performance I.Q. at the third year level. In those subjects living in "adverse" home environments there are highly significant differences between Verbal and Performance I.Q., in favour of the latter (see Tables 1 and 2). There is little reason to suggest that this discrepancy changes over the years. The total group of subjects from "adverse" home conditions scored significantly less on the Verbal scale at initial testing than those from "less adverse" home conditions ($t_{32} = 1.94$, $p < 0.05$). No significant differences were found at other years. A similar analysis of Performance difference between subjects from "adverse" and "less adverse" conditions yielded no statistically significant results.

DISCUSSION

The major finding in this study is that subjects who attended the special or secondary school in a deprived area increased in Performance and Verbal intelligence over a three year period despite the fact that they continued to live in "adverse" home environments. Less marked increases occurred in subjects living in "less adverse" conditions. Indeed, there is no significant rise in Verbal intelligence in children who attended special school from "less adverse" environments. However, such children had, as a group, higher verbal quotients at initial testing than their peers from "adverse" homes. There was a tendency for the subjects from "adverse" environments to have greater Performance I.Q.s than children from "less adverse" conditions, and this is consistent with the highly significant discrepancy between Verbal and Performance scores in the "adverse" home group.

Clarke's subjects from "adverse" homes were removed to an institution partly because of their home environment. The criteria for establishing adversity are fairly crude and it cannot be assumed that the present group of subjects from "adverse" environments came from as severely deprived homes as Clarke's. This may possibly account for the rather smaller I.Q. increments in the present study.

The increment rates in intelligence recorded in the present study were unlikely to be due to errors of measurement, or practice effects. Errors of measurement should remain approximately constant from one testing to another (Clarke, Clarke and Brown, 1959). Furthermore, we would not anticipate that practice effects influence the "adverse" home group differently from those subjects in "less adverse" homes. Any practice effect would tend to be very small (see Clarke's figures, 1954). The changes were likely to be largely due to accelerated growth rates. However, the present results, which can be legitimately compared with Clarke and Clarke's two-and-a-quarter-year test-retest interval, cannot be entirely explained, as in their research, in terms of removal of subjects from the adverse home environments. All subjects in the present research were still within their original home environments.

Two major explanations seem possible:

- (1) The subjects had entered a period of secondary and compensatory growth, despite the fact that they still lived in an "adverse" home environment.
- (2) The subjects moved from school to work and this environmental change resulted in stimulation of cognitive growth, particularly for the "adverse" home group. However, the complex nature of the findings must be underlined since

children in "less adverse" homes who also attended comprehensive schools showed exceptionally large increments in intelligence on leaving school for work. It therefore seems possible that aspects of the school environment play an important role in this growth.

The study underlines the importance of growth changes which occur after school leaving age, which is consistent with the work of Stein and Susser (1960), but the causes require further investigation. The possibility of growth increments being associated with a change to work environment is an interesting one and if supported could result in practical changes in the school curriculum (e.g. social and vocational training combined with part-time school and work. Vocational training units within the school).

The total group of children ($N = 12$) from the boys' secondary school showed particularly large gains in Performance I.Q. ($\bar{X}$ increase 11 I.Q. points yr 1 cf. 3, range - 14 to + 29). The secondary school was situated in an old building, in a deprived area of the city, was overcrowded and for boys only. Unlike the special school group whose students came from all parts of the city, the children came from the surrounding area; thus there was less contrast between "adverse" and "less adverse" homes in the secondary school than in the former group. This is perhaps consistent with the fact that subjects from "adverse" and "less adverse" homes in the secondary school group showed large rises in I.Q.

It is also of interest that children who lived in "less adverse" conditions and attended comprehensive schools showed sharp increases in Verbal ($\bar{X}$ increase of 6 points in 3 years) and Performance ($\bar{X}$ increase of 20 points in 3 years) intelligence. This sub-sample was too small to say whether the differences have any widespread implications, yet they deserve further investigation.

The low Verbal scores of children from "adverse" home environments possibly underlines the need for compensatory education in language areas, though it should be stressed that the study gives little support to the idea that areas of greater handicap are likely to show larger increments of intelligence.

The present results are relevant to a study by Fisher and Zeaman (1970). Their argument, based on Binet results, are used to suggest that growth functions can be calculated which represent a constant for particular ability levels, possibly reflecting a genetically determined aspect of intelligence. The present study, though based on many fewer subjects than Fisher and Zeaman's work, suggests that individuals of similar ability level in their mid-teens may grow at different cognitive rates, and that this may be associated with variation in and interaction of environmental conditions. This is underlined by the fact that some individuals from inadequate school conditions who recorded high I.Q. scores at the beginning of the study, showed exceptionally large increases in intelligence over the years. In addition, different aspects of cognitive ability may accelerate at different rates. The present results suggest that differential growth rates do occur and may be of considerable social and psychological significance and cannot be dismissed as having no "profound psychological significance" (see page 166 Fisher and Zeaman). Although the present study should be replicated it underlines the fact that intelligence is not just a function of the individual, but a function of the individual within an environment.

This study has dealt with cognitive changes in subjects from varied environ-

ments. This represents only one aspect of change but increments may also have occurred in social and emotional behaviour, (paper in preparation). Indeed, in view of Clarke's (1958) work and the social and remedial programs in some schools (Tolley, 1967) it seems possible that greater changes might be expected in the areas of social learning and adjustment.

SUMMARY

This investigation tends to support the Clarke hypothesis that subjects from "adverse" environments are likely to show greater cognitive growth than persons from "less adverse" homes. However, the present study indicates that increments in cognitive growth are not necessarily dependent on removal from the "adverse" environment. Explanation may involve maturation, in the form of secondary and compensatory growth, and change from school to work environments. Because of large increments in intelligence in children from "less adverse" homes leaving comprehensive schools there may be reason to suggest that school environment may play an important though at present limited role in cognitive development.

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REVERSAL AND EXTRADIMENSIONAL SHIFTS IN TWO SOCIOECONOMIC GROUPS OF PRESCHOOL CHILDREN*

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THERE is a fairly extensive literature to indicate that most adult subjects (Ss) perform reversal shifts faster than extradimensional shifts (e.g. Buss, 1956; Harrow and Friedman, 1958; Kendler and D'Amato, 1955). There is also evidence to suggest that the opposite is true for at least some infrahuman Ss (e.g. Kelleher, 1956). A few studies with human children of various ages suggest a developmental aspect to shifting performance (e.g. Kendler and Kendler, 1959; Kendler, Kendler, and Learnard, 1962). In order to explain these performance differences, Kendler and Kendler (1962) suggested that mediating responses of an all-or-none nature develop as a correlate of human growth. However, recent evidence suggests that task and training variables may be important determinants of such performances. Discrimination shift performances which seem to reflect the presence of attention or mediating responses have been obtained in very young children by varying either the nature of the task (e.g. Dickerson, 1966; Nolan and Pendarvis, 1970), or the amount of experience that S has had with the stimulus materials he is asked to discriminate (e.g. Youniss and Furth, 1964). Indeed, under some conditions, performances which seem to reflect attentional responding have been obtained from infrahuman subjects (e.g. Turrisi, Shepp and Eimas, 1969).

It has often been suggested that, while culturally disadvantaged children may be disadvantaged in a number of ways, they are very likely to be disadvantaged in terms of experiences which could help them succeed in school (e.g. Deutsch, 1966). For example, it could be that the very early experiences of culturally disadvantaged children lead them to solve problems in ways different from middle class children, and that the culturally deprived children subsequently show learning "deficits" primarily because the middle class problem solving strategies are the ones which are most effective in our schools, as they exist today.

The present study was designed to test the hypothesis that lower class children are less likely to respond "dimensionally" in learning visual discriminations than

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middle class children of the same age. Specifically, it was hypothesized that lower class preschool children would be less likely to learn reversal shifts faster than extradimensional shifts than would middle class children. Correspondingly middle class children might be expected to learn extradimensional shifts more slowly than would lower class children, since dimensional attention responses, while they clearly seem to facilitate reversal shifts, may also impede extradimensional shifts (e.g. Caron, 1969; Nolan, 1970).

METHOD

Subjects

The *Ss* were 64 children enrolled in one of several non-segregated daytime preschool programs in the Columbus, Ohio area. There were 31 males and 33 females in the group, ranging in age from 51 to 63 months. Children from three subsidized day care centers for children of working mothers, and a full-day, year-round Head Start Center constituted the low socioeconomic group ($N = 32$). Children from a two-day per week, half-day private nursery school, and a half-day University laboratory nursery school constituted the middle-class group ($N = 32$). The designation of *Ss* as low or middle-class was based on the nature of the school they were attending as well as the socioeconomic status of their families, as determined by both the North-Hatt Scale (1947)* and the system of occupational coding proposed by Gilpatrick (1968). All *Ss* were rated by occupation of family wage earner on the Gilpatrick system. In cases where both parents worked, the father's occupation was coded. The two socioeconomic status rating systems produced equivalent ratings for 52 of the *Ss*. The occupation of two parents (teacher's aide) was not listed on the North-Hatt Scale, and hence was rated solely on the basis of the Gilpatrick code. *Ss* whose parents were unemployed ($N = 10$) did not receive Gilpatrick ratings, but were automatically placed in the low socioeconomic status category. Hence *Ss* were divided into low and middle socioeconomic groups on the basis of ratings of occupation of parents, and type of facility they were attending.

Apparatus

The apparatus consisted of fifty 17.8×27.9 cm white cards on which 8.25 cm glossy enamel stimuli were painted 5.1 cm apart. Both stimuli on each card varied simultaneously in color (red or green) and shape (circle or triangle). Each stimulus combination appeared equally often in the set, and order of presentation was randomized, with the restrictions that no stimulus appeared more than three times in succession, and neither the correct stimulus nor any other stimulus appeared more than three consecutive times on the right or on the left. Two marble-holding boards were available, each one capable of holding 60 marbles.

Procedure

Each *S* was asked to play a game to see who could collect the most marbles.

* An expanded list of occupations, rated on the same basis as the original list, was also used. The ratings for the expanded list were done at different times by several groups of five raters, most of whom were sociologists at The Ohio State University. The authors are indebted to Alfred Clarke for his assistance with this part of the study.

Both the experimenter (*E*) and *S* had a marble board. The *S* was given a bowl of 15 marbles to put on his board, and was told that he was given the marbles because he had never played the game before and the experimenter already knew how to play. Another bowl of 125 marbles was placed near the child for use during the experiment. Each *S* was given the following instructions—"I am going to show you two pictures and I want you to pick the one—point to the one—that you think is the right one. If you pick the right one, you may take a marble from this bowl (*E* points to bowl) and put it on your board (point to board). If you pick the wrong one, you must give me one of the marbles from your board. We will see who can get the most marbles. When I show you the first picture, you won't know which is the right one, you will just have to guess." *E* presented the stimuli by placing the card on the table at which *S* was seated and asking *S* to point to the stimulus that he thought was correct.

If the child inquired about keeping the marbles, he was told that the marbles were part of the game and would be kept with the game. During the testing period, *E* occasionally said "point to the one that gives you the marble" or "the same one gives you a marble each time." As *E* presented the stimuli for the shift, she said "the same one is not right now, a different one now will give you the marble". If on a shift task a child approached 50 trials without solving the problem, *E* showed the child two cards simultaneously on which the stimulus values were reversed. She pointed to the positive stimuli saying "these two will always give you a marble". She then pointed to the negative stimuli saying "these two will never give you a marble".

Ss in the two socioeconomic groups were sequentially assigned to reversal or extradimensional shift conditions. Half of the *Ss* in each group and condition learned a color problem initially and half learned a form problem. Within the color dimension, half of the *Ss* were trained with red correct initially, and half with green correct. Correspondingly, within the form dimension, half learned circle correct initially and half triangle correct.

The detailed descriptions which follow illustrate the paradigm. In both examples the original discrimination problem was red positive, green negative, and shape variable and irrelevant.

Subjects were first trained on a two choice simultaneous discrimination problem in which stimuli varied in both color and shape. On each trial, a subject pointed to the stimulus he thought was correct. Subjects received the verbal feedback to the stimulus "That's the right one, that one gives you a marble" following choices of red stimuli, and "That's the wrong one, that one doesn't give you a marble" following choices of green stimuli. Subjects were trained to a criterion of 10 successive correct responses, with 100 trials as a limit. Upon reaching criterion on the initial discrimination, subjects made either a reversal or an extradimensional shift. During reversal shift training, subjects received the positive verbal feedback following choices of green stimuli, and the negative verbal feedback following choices of red stimuli. Shape remained variable and irrelevant. During extradimensional shift training, subjects received the positive verbal feedback following choices of circles, regardless of color, and the negative feedback following choices of squares. During extradimen-

sional shift training, color was variable and irrelevant.* In both shift conditions, subjects were trained to a criterion of 10 successive correct responses, with a maximum of 100 trials.

One subject did not reach criterion on the original discrimination and was eliminated from the experiment. In addition, three children who appeared frustrated or uncomfortable were excluded.

RESULTS

Number of trials to criterion, excluding the 10 criterion trials, was recorded for each *S* for both the original discrimination and the shift. If a *S* did not make 10 successive correct responses within 100 trials in a shift condition, training was discontinued and the *S* was assigned a score of 90 trials. Distributions of both pre-shift and shift learning data were distinctively non-normal and there was significant ($p < 0.05$) heterogeneity of the cell variances in both sets of data. Hence the data were analyzed by means of Mann-Whitney *U* Tests.

In original learning only one comparison approached the commonly accepted criteria for statistical significance. The low socioeconomic group required more training trials ($M = 17.8$: $Mdn. = 5.5$) to reach criterion than the middle socioeconomic group ($M = 8.1$: $Mdn. = 2.5$). The *U* Test for this comparison yielded a z of 1.33 ($0.05 < p < 0.10$). There was no significant difference in speed of learning form and color problems in original learning, and no significant interaction between dimension and socioeconomic group. Comparisons of reversal and extradimensional shift learning indicated that the middle socioeconomic group learned the reversal shift ($Mdn. = 2$) significantly ($U_{16,16} = 27$, $p < 0.002$, two-tailed) faster than the extradimensional shift ($Mdn. = 23.5$). The difference between reversal and extradimensional shifts was not statistically significant for the low socioeconomic group. However, the low socioeconomic group did learn the extradimensional shift ($Mdn. = 5$) significantly ($U_{16,16} = 70.5$, $p < 0.05$, two-tailed) faster than did the middle socioeconomic group. There was no significant socioeconomic status effect for the reversal shift. Means and standard deviations for the various shift groups are given in Table 1.

TABLE 1. TRIALS TO CRITERION FOR INDIVIDUAL REVERSAL AND EXTRADIMENSIONAL SHIFT GROUPS

Socioeconomic Group	Reversal shift			Extradimensional shift		
	<i>M</i>	<i>S.D.</i>	<i>N</i>	<i>M</i>	<i>S.D.</i>	<i>N</i>
Middle						
All <i>Ss</i>	5.1	6.6	16	33.4	28.3	16
51-57 Months	6.4	8.1	5	31.1	26.6	7
58-63 Months	4.5	5.6	11	36.2	29.4	9
Low						
All <i>Ss</i>	10.2	24.4	16	16.2	18.7	16
51-57 Months	11.1	27.9	9	12.6	19.5	9
58-63 Months	9.0	18.8	7	22.3	15.9	7

* Although this design could theoretically produce a bias in favor of reversal shift learning (e.g. Buss, 1956) there is little evidence to suggest that the commonly reported reversal-extradimensional shift differences are actually due to such a bias (e.g. Kendler and D'Amato, 1955). Further, there is little reason to expect that, if such a bias were present, it would differentially operate on one of the socioeconomic groups.

Age has been found to be an important variable in shift learning in children, and even though the age range of the children in the present study was quite limited, analyses were performed with respect to the *Ss*' ages, both over all *Ss* and within socioeconomic groups. Means for younger (51–57 months) and older (58–63 months) *Ss* within each socioeconomic group are given in Table 1. Although the relationship between the reversal and extradimensional shift means for the young and old low-socioeconomic *Ss* is intriguing, no statistically significant effects attributable to age were obtained.

Reports of *Ss*' performances on the Quick Test (Ammons and Ammons, 1962) were available for use as a rough estimate of level of intellectual functioning. These data indicated that all but two of the *Ss* were functioning at least at a normal level. One child in each socioeconomic group had a mental age estimate one year lower than his chronological age. There were no statistically significant differences on the Quick Test attributable to either age or socioeconomic level.

DISCUSSION

The middle class children in the present study learned the reversal shift significantly faster than the extradimensional shift, indicating that they did use dimensional attention responses in learning the discriminations. This finding, like the findings of Dickerson (1966), and Nolan and Pendarvis (1970), does not support the notion that preschool children lack dimensional or mediational capabilities. Further, the nature of the performance differences between the two socioeconomic groups was consistent with the hypothesis that the middle class children were responding dimensionally to a greater extent than were the lower class children. According to attention theory, increasingly strong attention responses should result in facilitated reversal shifts, coupled with progressively slower extradimensional shift learning (Zeaman and House, 1963, p. 194). Results consistent with this prediction from attention theory have been obtained when dimensional attention was strengthened by increasing dimensional salience (Caron, 1969) or by providing overtraining on the original discrimination (Nolan, 1970). In both instances, the procedures which increased dimensional attention facilitated reversal shifts, but made extradimensional shifts more difficult.

Within the two socioeconomic groups, differences between the means for the younger and older subjects were also consistent with the above mentioned prediction from attention theory, although these differences were not statistically significant. Within both groups, the older children performed reversal shifts faster than the younger children, but at a cost of slower extradimensional shift learning.

To the extent that there was no significant difference between reversal and extradimensional shifts, the performance of the lower socioeconomic level children parallels performances often reported for other groups of nursery school children and for retardates. However, in the present case, the "no difference" outcome is a bit difficult to evaluate. The performance of the lower class children could be classified as deficient in that there was no strong evidence that they used dimensional attention responses. While this "deficit" may have been responsible for the somewhat greater difficulty they had with the initial discrimination, it did not of itself seem to be very deleterious in their shift learning. For the lower class per-

formance to be considered deficient, it would seem that the benefits of dimensional attention would need to outweigh its apparent costs in terms of making extradimensional shifts more difficult. If compelling evidence of such benefits does arise, however, then training procedures designed to foster dimensional attention response tendencies (e.g. Nolan and Pendarvis, 1970; Zeaman and House, 1963) may need to be incorporated in remedial programs for the disadvantaged. Studies exploring the relationships among attentional responding and other cognitive variables are underway in our laboratory. Finally, it should be noted that although the performance of the lower socioeconomic group could be considered deficient, given the assumption that attentional responding is desirable, if rapid extradimensional shift learning per se was the criterion for desirable functioning, it would be the middle socioeconomic group which gave the deficient performance.

SUMMARY

Low and middle socioeconomic status preschool children learned color and form discriminations, followed by either reversal (R) or extradimensional (ED) shifts. The low socioeconomic status children learned the original discrimination somewhat more slowly than did the middle class children. The middle class children learned the R shift significantly faster than the ED shift but the lower class children did not. However, the lower class children learned the extradimensional shift significantly faster than did the middle class children, whereas there was no difference between the two socioeconomic groups in speed of reversal learning.

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COGNITIVE STYLES IN ADOLESCENTS PREVIOUSLY DIAGNOSED AS HYPERACTIVE*

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INTRODUCTION

A CHRONIC behavior syndrome having hyperactivity as its core symptom has been described extensively in the clinical literature (Burks, 1960; Clements and Peters, 1962; Laufer and Denhoff, 1957; Werry, Weiss and Douglas, 1964). The most common complaint made of these children is that they are extremely overactive or restless. Almost invariably the complaints also include that the child is unable to sustain attention for more than a short period of time and that he is extremely impulsive and high distractible. Even though of normal intelligence, hyperactive children often do poorly in school presumably because of their inattention and impulsive work habits.

One widely held belief has been that by the time the child matures into adolescence hyperactivity disappears (Laufer, Denhoff and Solomons, 1957; Lytton and Knobel, 1958). However, clinical reports (Laufer, 1962; Anderson and Plymate, 1962) and longitudinal studies (Menkes, Row and Menkes, 1967; Weiss *et al.*, 1971) have shown that although in young adults and teenagers hyperactivity and restlessness usually disappear, educational and emotional problems persist. Mothers continue to complain about their child's poor attention span and inability to concentrate. Concomitant with this is a chronic underachievement in school, poor self-image, and an inability to maintain goals (Weiss *et al.*, 1971). In trying to delineate the factors underlying the hyperactive's continuing academic retardation Hoy *et al.* (in preparation) compared teenagers who had been previously diagnosed as hyperactive with normal teenagers of similar age, I.Q., and socio-economic class, on a battery of tests which included measures of specific academic skills, i.e. oral reading, comprehension, spelling and vocabulary. Although hyperactives had failed a significantly greater number of school grades than controls, only one of the measures, a spelling test, differentiated the two groups.

Recent research with young hyperactive children (mean ages 8.3 yr) has suggested that many of the difficulties of the hyperactive child in the classroom may stem at least partly from his inefficient "cognitive styles" (Campbell, Douglas, and Morgenstern, 1971). These cognitive styles are thought to reflect individual differences in the approach one takes to a new problem rather than differences in intelligence or in specific cognitive abilities. Four cognitive styles are of interest

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in the present work. The first, reflection-impulsivity is considered by Kagan, Rosman, Day and Phillips (1964) to be important in situations which involve a choice among alternatives and is measured by the time it takes a subject to consider alternative solutions on a match-to-sample task. The impulsive subject responds more quickly and consequently makes more errors than one who is reflective. A second cognitive style dimension is field-dependence-independence which measures the ability of a subject to perceive a figure independent of its context, an ability which appears to be different from that of overcoming the influence of distracting stimuli (Witkin *et al.*, 1962). In contrast to field-dependent subjects, those who are field-independent are more analytical, seek intellectual mastery and are nonconforming. The ability to ignore distractions in order to focus on relevant stimuli and, as well, to inhibit incorrect verbal responses, appears to be part of another cognitive style dimension, constricted-flexible control (Gardner and Long, 1958; Klein, 1954); the flexible subject is better able to ignore distractions and to inhibit response to them. Finally, the fourth cognitive style dimension, strong vs. weak automatization (Broverman, Broverman and Klaiber, 1966) involves measurement of an individual's speed on a task requiring repetition of highly overlearned material. Broverman *et al.* feel that strong automatization abilities may be necessary for acquisition of new skills in which automatized or overlearned lower level habits are a part. Strong automatizers have been found to be less distractible, show greater occupational proficiency and a higher occupational level than weak automatizers.

Taken together, the cognitive style literature suggests that to learn successfully a child must be able to exert a certain degree of control over inner impulses, be able to scan his environment and select relevant cues, ignore distractions, and repeat overlearned responses rapidly. Campbell *et al.* (1971) found that when compared to a group of normal children, matched for age and I.Q. young hyperactives used more inefficient methods of problem solving in that they were more impulsive and field-dependent, more constricted in their ability to control attention, and slower on one of two measures of automatization. Surprisingly, Campbell *et al.* did not find hyperactive subjects to be more distractible than controls.

The purpose of the present study is to investigate the four cognitive styles discussed above in teenagers who five years previously had been diagnosed as hyperactive. We hypothesize that as teenagers, hyperactives will be more impulsive and field-dependent, more highly distractible, and be weaker automatizers than normal controls of similar age and intelligence. All except two of the hyperactive subjects used in the present study participated in the study done by Hoy *et al.* mentioned earlier. Consequently, this sample is known to be no less proficient on standard tests of academic skills than a comparable group of normal controls.

METHOD

Subjects

Twenty boys were selected randomly from a sample of 64 hyperactive children taking part in a 5-yr follow-up evaluation (Weiss *et al.*, 1971). Five years previously these children had been referred as a result of complaints of chronic, sustained hyperactivity from both home and school. At the time of the original referral all boys

were of average intelligence, i.e. had a Wechsler Intelligence scale for Children (WISC) I.Q. of 85 or above, and had no history of cerebral palsy, epilepsy, brain damage or psychosis. The mean age of boys participating in the present study was 15 yr with a range of 13.4–16.4 yr ($S.D. = 0.9$ yr), the mean I.Q. was 108.3 with a range of 93–135 ($S.D. = 9.72$).

Twenty normal children were individually matched with the hyperactives on the basis of age, W.I.S.C. Full Scale I.Q. and socio-economic class. Controls were obtained from the regular classrooms of three secondary schools in the Montreal area and screened to exclude boys with a history of hyperactivity, brain injury, and emotional or behavioral disturbance. The mean age of control children was 15.1 yr with a range of 13.6–16.3 yr ($S.D. = 0.8$ yr). The mean I.Q. was 108.2 with a range of 94–128 ($S.D. = 0.8$). The mean socioeconomic class as determined by the Hollingshead Scale, was 3.4 for hyperactives and 3.6 for controls. Thus for the most part the Ss in both groups came from middle class families. The two groups did not differ significantly with regard to age ($t = 0.05$, $d.f. = 19$), I.Q. ($t = 0.06$, $d.f. = 19$), or socioeconomic class ($t = 1.17$, $d.f. = 19$).

Procedure

Each S was tested individually at the Montreal Children's Hospital. A total of three tests were administered over a 2-hr test session. The order in which the tests were given was randomized for each S. A WISC was administered to boys who had not received one within the preceding 2-yr period. Before testing commenced, each S read a preprinted introduction to the study. They were told that some new tests had been prepared and that we were interested in finding out how difficult they were for teenage boys to do. In an attempt to reduce anxiety about test performance, Ss were told that their name would not be written on any of the tests; instead, each S was assigned a number which appeared on all of the tests he took. All Ss were paid \$5.00 for participating in the study.

Test administration

Matching Familiar Figures Test (MFF). The MFF was used to measure the dimension of reflection-impulsivity. The test consisted of 14 sets of pictures, 2 practice and 12 test items. S was shown a picture of a familiar object (the standard stimulus) and simultaneously eight similar stimuli only one of which was identical to the standard stimulus. S was asked to select the picture that was identical. If his first choice was incorrect, he was told that he was wrong and should look again. This procedure continued until he made the correct choice. E recorded the latency of the first response and the total number of errors for each item.

Embedded Figures Test (EFT). The EFT was used to measure the dimension of field-dependence-independence. The test consisted of 13 complex multicolored designs, 1 practice and 12 test stimuli and 6 simple shapes. The 12 test items were chosen from the original 24 items devised by Witkin (1950) and covered a range of difficulty levels. The procedure used on each trial was first to present the complex figure for 15 sec, then the appropriate simple figure for 10 sec, and then the complex

figure again with instructions to outline the simple figure in it. The simple figure to be located was never the same for any two successive trials. If *S* forgot what the simple figure looked like, he was allowed to see it again; however, the simple and complex figures were never shown simultaneously.

E scored the time *S* took to find the simple figure. A maximum of 5 min was allowed. If *S* did not find the figure within this time limit, his latency was scored as 5 min. As soon as *S* reported that he had found the simple figure, *E* noted the time but kept the stopwatch running until *S* traced the simple figure. If the response was incorrect, the time used in tracing the incorrect figure was included in the final time score, and *S* was told he was wrong and should look further.

Stroop Test. The Stroop Test was used to measure both the dimensions of constricted-flexible control and automatization. The test consisted of three cards on which were printed 100 items. On the first card *S* was asked to read 100 color words (red, green, blue and brown). On the second card he was asked to name 100 color patches (also red, green blue and brown). Performance on these two cards was used as a measure of *S*'s ability to respond rapidly on a task involving highly overlearned material (automatization). On the third card *S* was asked to name the color in which color words were printed, where the color of the ink and the color word were not the same. This card was used to measure *S*'s ability to ignore distracting clues (constricted-flexible control). On each card *S* was told to respond as rapidly as possible without making any mistakes. The total time for reading each card was recorded. In addition, a record was made of the number of errors on each card, i.e. the number of incorrect color responses.

RESULTS

Means and standard deviations of the cognitive style tests are summarized in Table 1.

MFF Test. In keeping with prediction, hyperactives were more impulsive than controls. Hyperactives took less time to make their first response ($t = 2.003$, $d.f. = 19$, $p < 0.05$) and made more errors ($t = 2.668$, $d.f. = 19$, $p < 0.01$) than controls.

EFT. Analysis of the reaction time scores indicated that hyperactives required more time to isolate the embedded figure than controls ($t = 1.732$, $d.f. = 19$, $p < 0.05$). The number of correctly isolated figures was not significantly different for the two groups ($t = 0.957$, $d.f. = 19$).

Stroop Test. A two-way analysis of variance with repeated measures on both factors was performed for both time and error scores. No difference was found between groups on any of the Stroop cards. Thus hyperactives and controls were similar with regard to automatization skills and their ability to ignore distracting stimuli. As would be expected, both time and errors increased as task difficulty increased from the first to the third card in both groups.

In order to parallel the analysis done by Campbell *et al.* (1971) in the present study, errors were further subdivided into complete and incomplete errors. A complete error was scored if *S* verbalized an entire incorrect color response; an incomplete error was scored if the *S* stopped himself before an entire error was verbalized. Analysis of variance showed no significant difference between groups.

TABLE 1. MEANS AND STANDARD DEVIATIONS OF THE COGNITIVE STYLE TESTS FOR HYPERACTIVES AND CONTROLS

Test	Hyperactives	Controls
<u>Matching Familiar Figures Test</u>		
Reaction time:		
Mean	39.9	55.3**
S.D.	22.8	26.9
Errors:		
Mean	16.2	8.9**
S.D.	8.3	5.2
<u>Embedded Figures Test</u>		
Reaction time:		
Mean	117.0	80.8*
S.D.	75.9	55.7
Correct:		
Mean	9.2	10.2
S.D.	2.5	2.3
<u>Stroop Test</u>		
Time score:		
Card A: Mean	50.3	48.5
S.D.	7.1	7.4
Card B: Mean	76.3	73.8
S.D.	18.0	13.0
Card C: Mean	137.2	134.5
S.D.	30.0	26.8
Error score:		
Card A: Mean	0.8	0.7
S.D.	1.1	0.9
Card B: Mean	2.3	2.3
S.D.	1.6	1.5
Card C: Mean	6.1	4.1
S.D.	4.9	3.6

* $p < 0.05$ by one-tailed test; ** $p < 0.01$ by one-tailed test.

DISCUSSION

The results of the present study indicate that the adolescent hyperactive child exhibits a similar pattern of inefficient approach to problem solving situations as observed in the young hyperactive child (Campbell *et al.*, 1971). This inefficiency appeared to be limited to tasks which were relatively novel and in which there was a greater degree of response uncertainty. Hyperactives took less time in reflecting over a problem solution on the Matching Familiar Figures Test and consequently made a greater number of impulsive errors than controls. On the Embedded Figures Test hyperactives had greater difficulty isolating the simple figure from a complex background, i.e. they took longer than controls, although this did not result in their ultimately making fewer correct responses. Nevertheless, this latter finding suggests that hyperactives are at a disadvantage when they must scan and select the relevant aspects of a complex stimulus situation.

Contrary to expectation, hyperactives were not weaker automatizers than controls. One explanation for this finding is that color naming and the reading of color words is a highly overlearned skill which has its antecedents in the preschool years. Whereas Campbell *et al.* (1971) found that young hyperactive children responded more slowly than controls on a color-naming task, by adolescence the hyperactive appears to have acquired competence in this overlearned skill. This observation gains support from the findings of Hoy *et al.* (in preparation) that hyperactives performed as well as controls on tests which probably involved highly overlearned academic content.

In keeping with the results of Campbell *et al.* (1971) the present study failed to show that hyperactive subjects were more distractible than controls on a color-distraction test. Moreover, even when a more difficult auditory continuous performance task was used with an adolescent sample, in which both meaningful and nonsense distractors were introduced, the performance of hyperactives and controls was similar (Hoy *et al.*, in preparation). Despite these results it is still not possible to say with assurance that hyperactives are no less distractible than normal children. Behavioral ratings of both young and adolescent hyperactive children in the classroom have indicated that both groups were more distractible than controls. Moreover, while mothers of adolescent hyperactives did not generally complain about hyperactivity *per se*, 46 per cent of them complained that their child was distractible and had difficulty concentrating (Weiss *et al.*, 1971). One possible explanation for the conflicting results regarding the distractibility dimension is that the hyperactives may be able to control their distractibility for the short and restricted time period involved in an experimental situation but not in the more ambiguous classroom or home situations. Obviously, more research is needed in order to delineate the situations and stimuli which lead to distractibility in the hyperactive child.

Since hyperactive children are frequently of average or even superior intelligence the tendency has been to enroll them in educational programs with normal children. These attempt to teach the hyperactive child without prior attention to abilities basic to successful problem solving, e.g. impulse control and focusing attention. While individual differences in cognitive style characteristics persist over time, a few investigators have succeeded in modifying impulsive responding with direct training procedures (Kagan, Pearson and Welch, 1966; Palkes, Stewart and Kahana, 1968) and with the stimulant drug methylphenidate (Campbell *et al.*, 1971). Since individual differences in cognitive style can be detected in the preschool years (Banta, 1968), it would appear that later problems might be avoided to some extent by early compensatory training. In addition, there is now experimental evidence to suggest that hyperactive children learn best under conditions which avoid delay (Campbell *et al.*, 1971), and in which they are consistently rewarded (Cohen, 1970; Freibergs and Douglas, 1969) and can work at their own pace (Sykes, Douglas and Morgenstern, 1969). The use of these techniques as alternatives to or in combination with direct training in impulse control and administration of stimulant drugs may not only aid the young hyperactive child in coping with new learning situations but may also help provide him with feelings of mastery and accomplishment which he would not otherwise experience.

SUMMARY

Four cognitive styles were studied in 20 adolescent boys previously diagnosed as hyperactive and 20 normal controls. The results indicated that the hyperactives were not impaired in their ability to perform on tasks involving highly overlearned abilities, i.e., color naming and reading color words, even under distracting conditions. They were deficient, however, in their approach to tasks in which there was a greater degree of response uncertainty. Hyperactives took less time to reflect over a problem solution when a number of alternative solutions were available and had greater difficulty isolating a simple figure hidden in a complex background.

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THE MENTAL HEALTH OF SIBLINGS OF CONGENITALLY ABNORMAL CHILDREN

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A HANDICAPPED child may present serious problems of adjustment to the family. According to Tizard and Grad (1961), families having a severely subnormal child living at home may be "dominated by the burden of care" when compared with families having a similar child living in an institution.

There is some evidence that an abnormal child may adversely affect the mental health of siblings. In the case of mentally retarded children, studies in Sheffield (Holt, 1957) and in Brisbane (Schonnell and Watts, 1957) showed that siblings may suffer through being deprived of parental affection and attention. Apley *et al.* (1967) found that more than a quarter of siblings of children with congenital heart disease had behavioural problems or psychosomatic disorders. Where the handicap is an acquired physical disease such as poliomyelitis, behavioural symptoms may emerge in siblings after the affected child has returned from hospital (Davis, 1963). Graliker, Fischler and Koch (1962), in the study of the families of mentally retarded children, found that sibling reactions were related to parents' reactions to the abnormal child; in cases where the retarded child was accepted by the parents, older siblings showed no disturbance at home or school or in their social activities.

It seems reasonable to suppose that the emotional and behavioural development of the siblings of a congenitally abnormal child will be influenced by the nature, severity, duration and prognosis of the handicapping condition.

The investigation reported here was designed to examine this possibility. The aim was to study two groups of school-age siblings, one from the families of children with Down's Syndrome, the other from the families of children with cleft lip or palate, in order to test the hypothesis that siblings of children with Down's Syndrome will have more emotional and behavioural problems than siblings of children with surgically treated cleft lip/cleft palate.

Down's Syndrome was chosen because it is usually diagnosed at birth; it leads to a prognosis of lasting mental handicap and it has a characteristic appearance recognised by many of the general public. Babies with this condition are prone to feeding difficulties and chest infections but may be quiet and undemanding. They pass through the developmental phases of childhood more slowly than normal children. The parents are aware that the affected child will never achieve independence.

At birth, babies with cleft lip are a disturbing sight to their parents (Slutsky,

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1969) but plastic surgeons are able to offer hope of corrective surgery. These babies are difficult to feed until the palatal repair at one year of age. Their subsequent development is normal.

At ten years of age, the two conditions are sharply contrasted. Children with corrected lip and palatal deformities attend ordinary schools and are usually treated in the same way as their siblings. Children with permanent mental handicap attend training centres and the gap between their achievements and those of their siblings steadily increases.

METHOD

Identification of subjects

Index cases ($n = 71$). The index group was made up of 36 school-age siblings of 22 children with Down's Syndrome, and 35 school-age siblings of 21 children with operated cleft lip/palate deformities.

The children with Down's Syndrome were identified through local Medical Officers of Health; they were aged 8-6-12 years and were attending local authority training centres in the Oxford region.

Children with cleft lip/cleft palate were identified through the Oxford plastic surgery department; their ages ranged from 9 to 12 years.

Controls ($n = 71$). Each of the 71 index cases was individually matched with a control school child on the following criteria: age within 6 months; sex; family size and ordinal position in the family; type of school; school year; residential area.

Controls were identified through the card index system of the City Education Department and the County Health Department.

Behavioural questionnaire

The main research instruments were the behavioural scales devised by Rutter (1970) for completion by parents (Scale A2) and teachers (Scale B2). These scales are known to be of high inter-rater and test-retest reliability. Both scales discriminate well between children attending child guidance clinics and other children in the general population. In the Isle of Wight survey, it was found that the two scales used in combination brought to light 80 per cent of children with psychiatric disorder (Rutter, 1970).

Scores of 13 and over on the parental and of 9 and over on the teacher questionnaire are rated deviant. Subscores distinguish between neurotic and anti-social disorders.

The questionnaires are suitable for administration by post; in the present study the teacher questionnaires were sent in this way to the head teacher at the school concerned.

The parent interview One or both parents of all index ($n = 71$) and all control ($n = 71$) children were interviewed by the author. All interviews were held in the family home, except that 11 mothers of children with cleft lip/cleft palate were interviewed in the out-patient clinic.

The primary purpose of the interview was to explain the research, to ask the

parents to complete the behavioural questionnaire about their child, and to seek their permission to contact the teacher. The opportunity was also taken to ask about management problems occurring in the previous 12 months and particularly in relation to the other children in the family. The topics covered included:

- (i) Holidays and family outings.
- (ii) Interests, hobbies and school work of the other children in the family.
- (iii) How the children played together in the home.
- (iv) Visits to the family home by friends of the other children in the family.

At each interview, the abnormal child was seen. In the case of the cleft lip/cleft palate children, photographs taken before and after the operation were available.

Assessment of problems of management

From data obtained during the interviews the investigator attempted to rate the severity of management problems concerning the handicapped child in relation to the other children in the family, using a three point scale of few/none, moderate and severe. Problems were rated as moderate if they imposed restrictions on the activities of siblings, and as severe if they were grossly disruptive of the home environment (examples are given in the Results).

Characteristics of the abnormal children

The children with Down's Syndrome all had the typical facial appearance making them immediately recognisable as "mongols". Half were able to speak well, whilst the other half were mute or unintelligible. Thirteen were described as friendly and lovable, 4 as quiet and "no trouble", and 5 as overactive, destructive or demanding.

Of the 21 children in the cleft palate/cleft lip group, 12 had both cleft palate and cleft lip with marked facial deformity at birth, 3 had cleft palate with a minor degree of facial deformity, and 6 had cleft palate with no external signs of abnormality. Those with cleft lip had a closure operation at 3-4 months of age. All 21 children had primary palatal repair at about 1 year of age. Ten with marked deformity and 2 with minor or no external deformity had secondary pharyngoplasty operations at ages between 5 and 9 years. No child had more than 4 plastic operations. Plastic surgery had invariably produced good results and the parents were pleased with the appearance of their children, particularly in the case of the 12 who had previously had a marked deformity. Eight children had received orthodontic treatment. Parents reported that the children resented orthodontic treatment more than having to be readmitted for secondary repair operations. No parents said that the cleft palate/cleft lip child presented behavioural problems. As a group, these children appeared unusually compliant and passive.

Characteristics of siblings

The 71 index siblings were drawn from 22 families having a child with Down's Syndrome (*D* families) and from 21 families having a child with corrected cleft palate/cleft lip deformities (*C* families).

The types of housing of these families are shown in Table 1. It can be seen that just under half were living in Council property.

TABLE 1. HOUSING OF FAMILIES OF INDEX CHILDREN

Type of Housing	C families	D families
Urban council	5	6
Rural council	5	4
Urban owner-occupied	10	10
Rural owner-occupied	1	2
Totals	21	22

TABLE 2. SIBSHIP SIZE OF INDEX FAMILIES

Size of sibship*	C families	D families
2	5	3
3	8	5
4	4	6
5 or more	4	8
Totals	21	22

* Including handicapped child.

The use of the Registrar General's Classification of occupation was not feasible with this material. Control subjects were found through the records of the Local Authority Education and Health Departments. These records did not specify father's occupation, but could be used for making a close match between home neighbourhoods. In the study of children it can be reasonably maintained that home neighbourhood is probably as good an index as father's occupation.

The distribution of sibship size is shown in Table 2. The mean sibship size was 4.3 for *D* and 3.5 for *C* families.

There was no significant difference in the proportions of *C* and *D* siblings in the three ordinal positions of first, middle and last born.

There were no broken marriages in the *D* families, but there were 2 in the *C* families and 3 in the controls.

In Table 3, the ordinal position of the handicapped child is shown. It is notable that over half the children with Down's Syndrome (12 out of 22) were last born whilst those with cleft palate/cleft lip were evenly distributed over first, middle and last-born positions.

School background of index siblings

The types of school attended by index siblings are shown in Table 4.

TABLE 3. FAMILY ORDINAL POSITION OF HANDICAPPED CHILD

Ordinal position	No. of children with Down's Syndrome	No. of children with cleft palate/lip
First born	3	8
Middle born	7	6
Last born	12	7
Totals	22	21

TABLE 4. TYPES OF SCHOOL ATTENDED BY INDEX SIBLINGS

Types of school	C siblings	D siblings
Primary	19	12
Secondary Modern	9	10
Grammar	—	3
Comprehensive	5	5
Private	2	6
Totals	35	36

RESULTS

Response rates

Index Siblings	97 per cent of parents completed the scales
	99 per cent of teachers completed the scales.
Control cases	100 per cent of parents completed the scales
	99 per cent of teachers completed the scales.

Behavioural ratings

The behavioural ratings made by parents and teachers are shown in Table 5. There is no significant difference between *C* siblings and their controls, or between *D* siblings and their controls, in the numbers of children rated deviant.

TABLE 5. NUMBER OF CHILDREN RATED AS DEVIANT AMONGST INDEX SIBLINGS AND CONTROLS

Scale in which rated as deviant	C Group		D Group	
	Index siblings (<i>n</i> = 35)	Controls (<i>n</i> = 35)	Index siblings (<i>n</i> = 36)	Controls (<i>n</i> = 36)
Parent scale only	7	8	3	3
Teacher scale only	5	2	3	4
Both scales	—	2	1	—
Total	12 (34%)	12 (34%)	7 (19.4%)	7 (19.4%)

χ^2 no significant difference.

Amongst the 21 *C* families, there were 9 (43 per cent) having deviant siblings and amongst the *D* families, there were 5 (23 per cent). The corresponding figures for control families were 12 out of 35 (34 per cent) and 7 out of 36 (19 per cent).

In the *D* families only, there was a tendency for more deviant siblings to come from families where the handicapped child was not the youngest. Thus, 5 deviant siblings came from 3 of the 10 families where the handicapped child was the first born or the middle born, whilst only 2 deviant siblings were from the 12 families in which the handicapped child was the last born.

When the deviant children were divided into diagnostic categories according to subscores or rating scales, again no differences were found between *C* siblings and controls, or between *D* siblings or controls.

TABLE 6. DEVIANT SIBLINGS CLASSIFIED BY DIAGNOSTIC CATEGORIES

Categories	D siblings	Controls	C siblings	Controls
Neurotic boys	3	2	2	3
girls	2	2	1	1
Total	5	4	3	4
Antisocial boys	2	2	3	4
girls	0	1	4	2
Total	2	3	7	6
Mixed boys	—	—	—	1
girls	—	—	2	1
Total	—	—	2	2
Grand total	7	7	12	12

χ^2 no significant difference.

In Table 7, the relationship between deviancy-ratings and birth order is shown for the combined *C* and *D* groups of siblings, and for the combined control groups. There is a tendency amongst the *C* and *D* groups for more first born children to be rated as deviant, whilst amongst the controls more last-born are so rated, but the differences are not significant.

TABLE 7. RELATIONSHIP BETWEEN DEVIANCY AND BIRTH ORDER

	Index siblings (D and C)			Control siblings		
	Number	Deviant	%	Number	Deviant	%
First born	14	6	42	14	3	21
Middle born	42	10	24	42	11	26
Last born	15	3	20	15	5	33
Total	71	19		71	19	

Problems of management

In Table 8, ratings of Problems of Management of the handicapped child are shown in the Down's Syndrome families and in the cleft lip/cleft palate families.

TABLE 8. PROBLEMS OF MANAGEMENT

	Few or none	Moderate	Severe	Total
Down's Syndrome Families	9	7	6	22
Cleft lip/palate Families	19	2	—	21

In the Down's Syndrome Group, amongst the 7 families with moderate problems of management, 4 had limitations of family social life or family mobility (e.g. unable to emigrate to Australia because of the handicapped child). In 3 families, the siblings frequently acted as caretakers of the handicapped child. Amongst the 6 families with severe problems of management, in one there was excessive parental attention to the Down's Syndrome child at the expense of the other child in the home; in 2, there was open hostility by the parents to the Down's child coupled with excessive expectations of the other children; and in 3, family life was dominated by the destructiveness or overactivity of the handicapped child.

Two families in the cleft lip/palate Group had problems rated as moderate. One family whose cleft lip/palate child had been born in the U.S.A. had experienced financial difficulties. The other family was well known to local authority social workers as a problem family. Their inability to cope with necessary hospital appointments was part of a general inadequacy.

In the Control families, 4 parents reported problems of management with their children. In two of these cases, the problems were secondary to marital difficulties, whilst in the other two cases, the problems were attributed to other stresses (e.g. to failure in the 11 plus school examinations).

DISCUSSION

In evaluating the results of this study, it should be borne in mind that the numbers of subjects in the two index groups and two control groups were fairly small. It is also to be emphasised that the children with Down's Syndrome were all attending training centre and were not in residential institutions. This might mean that their families were a selected group in so far as they were able to keep their affected child at home.

The study had certain methodological advantages in that use was made of rating scales of established reliability and validity, and matching of siblings was uniformly good. The investigator conducted personal interviews with the parents of all 142 subjects; as this was a preliminary study, it was not possible with available resources to tape-record all the interviews and thus enable ratings to be made by and independent assessor.

The main finding was that neither the school-age siblings of the children with Down's Syndrome, nor the school-age siblings of children with treated cleft lip/palate, had any greater degree of behavioural disturbance than the siblings of control children, as measured by parental and teachers' report. A second finding was that more than half the Down's Syndrome families were experiencing moderate or severe problems of management, whilst only 2 of the cleft lip/palate families were meeting moderate difficulties.

It is perhaps not surprising that the siblings of the cleft lip/palate children did not show a greater degree of disturbance, particularly as the results of the surgery were good. However, the finding that the siblings of the Down's Syndrome group did not show excessive disturbance was unexpected, particularly in view of the greater number of problems of management.

Whilst no firm inferences can be drawn from these relatively small numbers, the findings of this study support those of Tizard and Grad (1961), Holt (1957) and Schonnell and Watts (1957), that the families of mentally retarded children are likely to have an increased burden of care. They do not confirm the findings of Holt (1957), and Schonnell and Watts (1957), that the mental health of siblings is adversely affected.

That the siblings of Down's Syndrome children did not show greater disturbance calls for explanation. On the available evidence it can only be speculated that the affected families were able to develop ways of adapting to the problems arising from the birth and development of an abnormal child. Sharing of these problems may have led to a greater sense of purpose and cohesiveness in the family. Graliker, Fishler and Koch (1932) reported that siblings are affected by the attitude of the parents to the handicapped child. Certainly in the present study disturbance was reported in siblings whose parents expected them to overcompensate for the disappointment of a handicapped child.

These questions can only be resolved by intensive long-term study of the affected families. The author is at present engaged in a prospective study of families shortly after the birth of a baby with Down's Syndrome.

SUMMARY

(1) An index group of 36 school-age siblings of children with Down's Syndrome and another index group of 35 school-age siblings of children with cleft lip/palate

were compared with 71 individually matched school children. (2) Behavioural questionnaires (Rutter Scales A2 and B2) were completed by parents and teacher for all index siblings and controls. (3) No significant difference in behavioural rating was found between either index group and their controls. (4) At parental interview it was found that families of children with Down's Syndrome were experiencing more problems of management than families of children with cleft lip/palate deformities.

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CRITICAL NOTICE

Childhood Behaviour and Mental Health. Edited by MICHAEL SHEPHERD, BRAM OPPENHEIM and SHEILA MITCHELL. University of London Press, London. pp. 240. £3.40.

FAR TOO often child psychiatrists have had to rely on knowledge gained only from a study of highly selected samples of clinic children. As Kanner pointed out, this has resulted in a tendency to attribute to single behaviour items an exaggerated seriousness with regard to their intrinsic psychopathological significance. It has also meant that views concerning the influence of family pathology on child development have largely derived from biased samples of children sent to psychiatrists, with a corresponding lack of information on what families in the general population are like. Epidemiological studies of the total population of children in the community are a necessary corrective to this tendency. In this book, Professor Shepherd and his colleagues report on an important and well-planned survey of some 6000 Buckinghamshire children aged five to fifteen years who attended local authority schools in 1961.

Considerable care was taken in developing a parental questionnaire to assess children's behaviour. This was pre-tested to ensure clarity, lack of ambiguity and precision. There was a pilot study designed to evaluate response rates with respect to different methods of approaching parents (via the school was best), and a high degree of co-operation was obtained. Parental questionnaires were completed for 93 per cent of the children and teachers questionnaires for 97 per cent. Interestingly there was evidence that the small proportion of boys for whom parental forms were not returned were especially likely to show antisocial behaviour.

This careful survey gave rise to much useful information on the prevalence of problem behaviour in school children. Most deviant behaviours (but not mood disturbances) were commoner in boys, and high "total deviance scores" were more frequent in oldest children, in those from large families in children with physical ill-health, who had been separated from both parents for a period of at least a month, or with poor academic attainments, but little association was found between deviance and social class as assessed by father's job. On the whole, deviant behaviour tended to decrease with age but age trends differed according to the behavioural item studied. Thus, fears, of the dark and of animals were much commoner in younger children, but social fears did not show this age trend. (The age trend for these items is shown by easily read graphs but the histograms used for some other items are exceptionally difficult to follow).

This most important part of the investigation occupies well over half the book but the portion of the study which has given rise to most interest and controversy (arising from previously published papers) is that concerned with children attending child guidance clinics. This is unfortunate as the conclusions here are less well based than those stemming from the epidemiological study. The authors draw three main conclusions from the clinic study: (a) The degree of emotional/behavioural disturbance shown by the child is *not* the main reason leading to psychiatric referral (p. 136). Rather, clinic patients differ from other children primarily in terms of the attitudes of their mothers: (b) Emotional ill-health in children tends to recede spontaneously as the children grow older (pp. 144 and 154), and (c) There is no evidence that treatment in a child guidance clinic makes any difference to whether or not the child gets better (p. 146-7). As these conclusions present a serious challenge to many of the notions which underlie psychiatric practice the supporting evidence requires careful study.

Referral influences

The conclusion that the degree of disturbance was not the main factor leading to psychiatric referral is based on a comparison of clinic children and children in the general population matched for age, sex and behaviour. Unfortunately, the matching on behavioural items completely eliminates

the point of the comparison. As the groups are matched for severity of disturbance it is hardly surprising that they do not differ in this respect! What is needed to test this conclusion is the comparison *before* matching on behaviour. The authors did not do this but an estimate* may be obtained by comparing the clinic children with the general population as a whole, with respect to the proportion with a total deviance score of four or more (the cut-off point used in the study). When this is done it may be seen that 80 per cent of the clinic children have scores of at least 4 (p. 136) compared with only 11 per cent of the general population (p. 79)—a sevenfold difference. As this difference is far greater than any other found, it must be concluded that, regardless of the authors' statement to the contrary, the evidence suggests that severity of disturbance *was* the main factor leading to psychiatric referral.

Even so, there are valuable findings on some of the other ways in which clinic children differed from the matched controls. More of the clinic children came from broken homes, more had had separation experiences, and more had lost a sibling by death. The parental attitudes to the children and their behaviour differentiated the clinic children from their controls, and more of the clinic children had mothers who reported emotional disturbance. These findings mean that some of the associations between parental characteristics and disorder in the children reported from clinic studies may represent, in part, reasons why children come to clinics rather than reasons why the children develop psychiatric disorder. It also means that there are more disturbed children not attending clinics than there are receiving psychiatric treatment. This is important, but the implication that problem behaviour is not the main cause of referral is quite unjustified on the basis of the evidence presented in this book.

Remission

The conclusion that emotional ill-health tends to recede spontaneously is mainly based on a follow-up in 1964 of the children found to be deviant three years earlier in their general population survey of 6000 children. Of the children with a total deviance score of 4 or more in 1961, over 70 per cent had reduced deviance scores in 1964 whereas only 16 per cent of boys and 11 per cent of girls had become more deviant. This is certainly good evidence for a tendency to remission. But it is necessary to go on to ask how complete is the remission. The findings in this connection are not quite so reassuring. Even after three years, 47 per cent of the boys and 44 per cent of the girls still had a total deviance score of 4 or more—a rate 4 times that in the general population and ten times that for those found non-deviant in 1961! In other words nearly half the children were still as seriously disturbed as those attending child guidance clinics.

The matter may also be examined with the two year follow-up of the matched groups of clinic and non-clinic children. Thirty-four per cent of the clinic children and 39 per cent of the controls showed unchanged or even worse behaviour at follow-up. Again, a substantial proportion with continuing disorder. If the view is taken that most children recover spontaneously and so do not need treatment it is also relevant to ask how long the children had shown psychiatric disorder when first seen. No information was obtained in this point but other studies (Rutter *et al.*, 1970) have shown that when children are identified as "deviant" on a cross-sectional survey, well over half have had their disorder for more than three years. This means that in many cases remission has still not occurred after five years (three years prior to identification and two years follow-up) and in other cases remission only occurred after several years. If treatment could do no more than reduce this period of suffering it would surely be most worthwhile. Whether in fact it can do that is considered below. Whether child psychiatrists focus their attention on the children with disorders likely to be chronic instead of those going to improve spontaneously in the near future remains a matter for further research.

Efficacy of child guidance treatment

The conclusion that treatment makes no difference to prognosis is based on the finding that as

* It is an estimate because the groups are not matched for age and sex. As they do not differ markedly on either variable this should not greatly affect the comparison.

many control children (61 per cent) improved without treatment as did clinic children with treatment (65 per cent). This result offers no support for the value of clinic treatment, but it must be evaluated in the knowledge of how representative were the clinic children, what disorders the children showed, what treatments were used,* how long the children were followed and how well the groups were matched. None of these considerations gives much cause for confidence.

In the first place, as the authors note, the clinic children were unrepresentative of those attending the clinics studied. In one clinic, access to the families was refused for more than half the children (because the staff felt a research interview would interfere with therapy), and in another clinic only one family out of seven could be contacted. A further 27 per cent were excluded as unmatched. Altogether, only half the children referred to clinics during the period of the survey were included in the study. The children left out of the study included the most seriously disturbed.

No diagnoses were made (although the excluded conditions are noted and case histories of 4 matched pairs of children are given in Appendix 2) so it is not possible to know what disorders were being treated. No description or account is given of the treatments used so the therapeutic methods also remain totally unknown. The follow-up period of two years is long so that if the natural remission rate is high there is no opportunity to determine if treatment *shortens* the disorder (as distinct from increasing the final remission rate).

These factors all limit the conclusions that can be based on the study but the most crucial consideration is the matching of the groups. This, too, leaves much to be desired.

Firstly, the groups differed in the severity of disturbance (26 per cent of clinic children had mild or very mild disorders compared with 48 per cent of controls). This lowers one's confidence in the findings but in fact it may not have made much difference to the results, because the reliability of this rating was low (correlations between raters ranged from +0.11 to +0.65) and severity did not relate to outcome. Much more important are the differences in family characteristics between the groups. As noted above, the clinic children differed from controls with regard to broken homes, separation experiences, loss of sibs, parental attitudes and mother's emotional disturbance. It is highly likely that these factors related to prognosis but curiously this possibility seems to have been examined for only some variables and for none in terms of effects on case-control comparisons with regard to outcome.

Other family factors *were* found to be associated with outcome. Thus, children were most likely to improve when the mother was not working, the parents were in good physical health, the mother's mental health improved, there were good family relationships without discord, and where the parents worried about the child's behaviour (rather than being irritated by it). Unfortunately, in most cases no clinic-control comparisons are given for these variables in this form. A comparison with the factors that did differentiate the clinic and control families (*vide supra*) suggests that if they had been looked for differences would probably have been found.

Because the clinic cases differed from the control children in so many respects (severity of disorder, family pathology, children's separation experiences and parental attitudes), it was essential to control for these baseline differences in looking at changes over time. This was *not* done and without this control it is impossible to determine the extent to which differences in the initial characteristics of the two groups are responsible for differences (or lack of differences) in outcome. This is a serious omission as it means that no conclusion may be drawn from the case-control comparison. If the clinic cases had a *worse* expected prognosis because of the frequent family pathology, then an actual outcome *equal* to controls implies the efficacy of treatment. A sad waste of data as there are a variety of statistical techniques (such as predictions based on a multiple regression equation or an analysis of covariance) which could have been employed to take account of baseline differences (see Thorndike, 1963 for an excellent discussion of this issue).

In view of these defects in experimental design it is not possible to draw any conclusions on whether psychiatric treatment had made any difference to the children. This is a pity as there is an urgent need for information on this point. There are several studies which show that properly selected treatments for certain types of disorder may be significantly beneficial (Rutter *et al.*, 1970) but it remains an open question how far the average clinic utilises these treatments selectively in the way which most benefits the child. There is conservatism in some quarters which makes for a

* The authors themselves very fairly point to the limitations of their findings with respect to the type of disorders treated and the breadth of treatments used (p. 148).

rejection of new techniques and an undue reliance on the traditional pattern of "P. S. W. see mother and psychiatrist see child". It could well be that this means that clinic treatment is often less effective than it should be. The criticisms of this particular study do not detract from the authors argument for the need to evaluate treatment and to reconsider whether we are making the most of our resources. Professor Shepherd and his colleagues are quite right to insist on the urgent need to assess what we are doing in our clinics and to determine whether a readjustment in our approach might better meet the needs of our patients and their families.

Conclusions

This clearly written, important and carefully conducted epidemiological study provides much of interest and value for all those concerned with the care of children with emotional and behavioural difficulties. Unlike many similar reports, it gives ample detail on methodology (indeed this critique would not have been possible without such good documentation) and it contains many useful tips on how to conduct surveys of this kind. The findings on the value of clinic treatment are somewhat disappointing but point to the need for further studies and suggest areas requiring special attention. The book closes with a thoughtful account of the factors which should be taken into account when deciding whether any behavioural disturbance is or is not of clinical significance. We can all join with the authors of this stimulating book in wanting to see child guidance follow Sully's precepts as "the application of scientific methods to practical problems of treating, training and supervising the development of the individual child according to his individual needs".

M. L. RUTTER

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BOOK REVIEWS

Mental and Physical Handicaps in connection with Over-ripeness Ovopathy. P. H. JONGBLOET, H. E. Stenfert Kroese N.V./Leiden, Holland, 1971, pp. vii + 147. Df 124.
Trisomy G/Normal Mosaicism (A cytological and clinical investigation). E. S. SACHS, H. E. Stenfert Kroese N.V./Leiden, Holland, 1971, pp. xvi + 93. Df 119.23.

IN HIS thesis on the possible connections between mental and physical handicaps with ovopathy, Dr. Jongbloet commences with the premise that physicians endeavouring to advise parents on the probability of their having a second severely handicapped child may have tended to over-concentrate on complications during late pregnancy and around the time of birth. Careful examination, including post-mortem examination of the brain, often suggests factors operating long before birth.

Dr. Jongbloet's thesis stresses germinal factors which may disturb the normal ripening process of the human egg. It was noted in a subnormality institution in Ottersum, Holland, that a child with a supposedly non-genetic condition, Goldenhar's syndrome, had been conceived late in the menstrual cycle. This led to an investigation of the circumstances of conception of handicapped and normal children and established an increased incidence of spontaneous abortions, stillbirths and developmental anomalies in all groups in which conception, employing "safe period" birth control methods, was considered to have occurred late in the menstrual cycle. The possibility is suggested that periodic abstinence, without basal-body-temperature control, may endanger the health of future children by favouring fertilization of over-ripe eggs. Questioning of 172 couples revealed a clear correlation between occurrence of pathological progeny and "biological failure" of this method. It is suggested that confirmation of these results could lead to important prophylactic measures and definite influence upon human and genetic problems.

The over-ripeness theory may explain why some types of mental deficiency commonly ascribed to pregnancy complications, obstetric factors and perinatal disturbances, are often accompanied by cerebral malformation, congenital anomalies and abnormal dermatoglyphic patterns.

Study of monthly incidence of Down's, Klinefelter's and Turner's births revealed seasonal fluctuations, with a relative increase of "pathological conceptions" during spring and autumn. Both oestric patterns in the female and spermatopathy in the male might be linked by climatologic factors.

The author evolved seven criteria which must be satisfied before malformations and other diseases should be attributed to over-ripeness ovopathy. He believes these give a sound basis for counselling and future prophylaxis.

Though difficult and highly technical, this book has some of the appeal of a detective story. The documentation appears painstaking and thorough. The presentation is elegant and illustrated by numerous tables and photographs. It should stimulate interest and, as is the author's wish, further research.

Dr. Sachs' monograph, a uniform volume in the same series, has the additional immediate appeal of a brilliant cover picture by Tinkelenberg, in which the theme of mosaicism is conveyed by blue and black chromosomes, Matisse-like figures dancing across a mongol hand. Again, the presentation and publishing are immaculate and the book is clearly illustrated.

Chromosomal patterns in which only a certain proportion of cells have an extra G chromosome occur in patients with signs of Down's syndrome, but also in apparently normal persons, including parents of Down's children. Ten mosaic patients were studied intensively at Leiden by chromosome studies, clinical examinations (including dermatoglyphs and pelvic radiology), maternal ages and birth weight, leucocyte examinations and biochemical investigations. The results indicate that careful clinical investigation may lead to a possible diagnosis of either Down's syndrome or trisomy G mosaicism in patients in whom this was not initially thought of. Those patients with over 30 per cent trisomic cells cannot be distinguished from Down's syndrome on clinical grounds, since no linear

relation could be found between the incidence of positive signs of Down's syndrome and the percentages of trisomic cells. Detailed case summaries of the ten patients are included and the references run to eight pages. The book contains a wealth of information, lucidly presented, and can be recommended.

P. GRAHAME WOOLF

Autistic Children: A guide for Parents. LORNA WING. Constable, London, 1971, pp. xiii + 157. £2.00.

WHEN a child is diagnosed as autistic, the quality and amount of support and counselling given to the family varies immensely, but even for those who are fortunate in this respect, this book will be a valuable guide. It is brief and simply written, with a detailed table of contents and an index. Its range is wide, and it gives a rounded picture of the handicaps of this group of children, which could help parents to envisage the possible future of their own child.

There are two parts: a description of autistic children, and a discussion of their education and management. Possibly the most valuable contribution of the book lies in the first part: in three pages, Dr. Wing traces the way through the maze of diagnostic and descriptive terms, and in later chapters she deals with theories of causes of autism, and compares the handicaps found with those of other groups, such as aphasics and the mentally retarded.

The second part includes brief chapters on the problems of the family, services for autistic children, and the role of parents' societies, but the bulk of it is devoted to the role of the parents. It concentrates on advice on how to modify the child's behaviour, emphasising consistent reinforcement, and the importance of a structured environment. This long chapter is organized under headings of the management of difficult behaviour, the teaching of basic skills, and ways of providing the child with a wide range of social experience.

This section seems less successful. In general there is an imbalance of detail in favour of the less difficult, more developmentally advanced child. For example, the inclusion of detailed instructions on how to teach a child to name colours and letters, when toys and games are given scant attention, seems unjustified. The reviewer would suggest that it is particularly when dealing with the more severe behaviour problems, and in the earlier stages of diverting the children from preoccupation with simple sensations, that parents benefit from prescription rather than precept.

Dr. Wing gives detailed suggestions on ways of modifying speech to an autistic child, in order to ensure and gradually enlarge his comprehension. This is a particularly valuable contribution as specialists all too often neglect to discuss this with parents.

Although problems of family adjustment and parents' feelings of guilt and shame are discussed, the fact that they frequently feel angry and rejecting is not mentioned, and it may be argued that many parents are in such a lonely position that they need to be told that they are not alone in experiencing this.

This most welcome book is reasonably priced, and besides being a mine of information, its accounts of some of the embarrassing behaviour of autistic children will give harassed parents an occasion for rueful laughter.

BARBARA SPODE

Mental Handicap, A Select, Annotated Bibliography. Compiled by S. S. SEGAL. NFER, Book Publishing Division, 1972, pp. 52. 40p.

THIS useful short bibliography is compiled for the new breed of special educator who wishes to refer to current research and also look up bibliographies and review articles up to 1967.

It reflects the shift in emphasis in the care of the retarded back to the educationalist and also the boom in published research over the last ten years which exceeds that for any period in the past. Although purporting to help the student who has to search into unfamiliar disciplines it is in fact very much orientated towards educational research and, as its title implies, is very selective. The annotations are helpful but perhaps too short and suggest that some have been skimmed rather briefly by the author as somewhat incongruous detail is sometimes emphasized. Others errors are made,

reference in the index being made, for example, to only one review on behaviour modification which in fact turns out to be a biochemical study.

This bibliography will, however, be a useful starter for students concerned with the education of the mentally retarded.

J. A. CORRETT

Behaviour Modification in Child Treatment: An Experimental and Clinical Approach.

R. M. BROWNING and D. O. STOVER. Aldine-Atherton: Chicago, 1971, pp. vi + 422. No price stated.

MUCH OF the literature on behavioural modification approaches to children's disorders consists of single-case studies bringing isolated behaviours under experimental control within a laboratory setting. These studies have proven valuable in demonstrating the feasibility of applying behavioural techniques to work with children, but there are many differences between laboratory and real-life settings. This book describes the attempts of the authors to apply broadly based modification techniques within an experimentally oriented children's in-patient unit—the Children's Treatment Centre in Madison.

The major emphasis in the book is on discussing methodological issues concerned with evaluating progress during treatment, rather than on describing treatment techniques themselves. In Chapter One, the authors affirm their commitment to the single case experimental approach, so long associated with the name of M. B. Shapiro. Recognizing the uniqueness of each patient in turn requires a unique treatment programme. The problem for the applied scientist/therapist is of finding valid measures with which to monitor therapeutic change. Thus, Chapters Three and Four discuss the problems of measurement and research design in some detail. The discussion of measurement is valuable, that on research design is limited and, at times, pretentious. Thus, the straightforward application of a treatment before a non-treatment baseline is established is elevated to the status of the "B Design", whilst many well established individually centred designs, such as the use of multiple baselines, are never discussed.

Chapter Five contains general descriptions of treatment techniques used with the children in the Treatment Centre. Chapter Six focuses on a particularly vexing problem which will be recognized by most therapists—the child who is reinforced by adults' verbal punishment and is punished by adult's praise. The important point that the authors make is that there are wide individual differences in children's responses to social reinforcers, and that the therapist must never assume mechanistically that adult attention is always rewarding.

Chapter Seven is 200 pages long and describes 5 case studies in great detail. Four of the children are young, psychotic children, and the fifth is an older, deaf boy. In each case, the authors draw on masses of data gathered by nursing staff and research workers, to illustrate the children's responses to a variety of treatment programmes.

It is clear from the detailed case studies that the authors have been thoroughly involved with the children and their families. They are not just studying maladaptive responses which happen (inconveniently for some) to be attached to children. They are dedicated to helping the parents and children. Traditional parent counselling and direct parent teaching are both used in ensuring that treatment effects generalize from the clinic into the home.

Readers who already know a good deal about behaviour modification techniques with children will find much of interest in this book, but they will have to work very hard for their reinforcements. The book is written in an atrocious style—full of grandiose phrases and neologisms. The case histories are fascinating, but too repetitive, and the whole publication would have been greatly improved by ruthless editing.

WILLIAM YULE

Traite de Psychologie de l'Enfant. 1st Edition. H. GRATIOT-ALPHANDERY and RENE ZAZZO. Presses Universitaires de France, Paris, 1970, pp. 204.

THIS WORK, the fourth in a series of textbooks on child psychology, deals with the emotional and moral development of children.

Following a lengthy introduction, the main part of the book is divided into two. The first part discusses the emotional development of the child in infancy—up to 3 years of age; the second considers this development during the subsequent years up to and including adolescence.

The authors' attitude is clearly behaviouristic. They claim to have sought to be as objective as possible, and consider that any theory to be valid in this field must be based upon observation, experiment, parents' reports and when possible on tests.

The result is a book which presents a summary and discussion of the different theories and observations relating to the emotional development of children: such as those of Wallon, Mauco, Piaget, Gesell, Spitz and Isaacs. In that sense it makes no original theoretical contribution. None the less, it is clearly set and represents a fairly accurate picture in behaviouristic terms of children's emotions and personal relationships. Furthermore, its many references provide a very useful bibliography. But notwithstanding the authors' determination to follow a behaviouristic line of argument, this book in its treatment of psychoanalytic theory is poor to the point of being misleading.

M. DICKS-MIREAUX

Handicapped Children—Their Potential and Fulfilment. Edited by IAN PETRIE. Joint Council for the Education of Handicapped Children, Cheshire, 1971, pp. xvii + 113. 50p.

THE FIRST National Conference of the Joint Council for the Education of Handicapped Children was held in July 1970. Some 50 papers were presented and the editor has selected 16 of them for inclusion in this small book. The delegates to the conference were predominantly teachers and it was from their discipline that the most valuable contributions came. Cave presented a succinct and masterly review of recent research and developments in special education and outlined some of the many areas of ignorance in this field. Brennan estimated that 10 per cent of the normal school population required remedial teaching because of educational backwardness, retardation or specific learning difficulties. Several speakers supported his view that the needs of these children as well as those with physical handicaps required more imaginative and comprehensive provisions within normal schools rather than a proliferation of special schools. Rosen provided a powerful argument in favour of admitting a diversity of types of children to residential Homes rather than keeping different categories separately. Williams and Chazan championed the cause of prevention for educational disabilities in disadvantaged children. Williams stressed the need for research to discover those relevant experiences of the normal child that the disadvantaged lack. He showed that remedial education benefitted the environmentally deprived child much more than those from "good" homes. He also claimed that the need for special education might be lessened by between 20 and 30 per cent if the higher incidence of educational retardation in summer born children was reduced by allowing those who needed it an extra year in reception classes. Chazan's description of the programmes for compensatory education with disadvantaged children in Swansea made exciting reading. Similar programmes must become obligatory throughout the United Kingdom. He emphasized in particular the need to compensate for deficiencies in language and the fact that some children require a structured or programmed approach rather than free play and self chosen activities. Downing described his research on the importance of cognitive clarity in pre-reading and early reading. Most of the papers were concerned with the educationally retarded child rather than those who were backward or had specific handicaps. There were two exceptions. Taylor spoke on recent developments in the education of deaf children deploring the present distinction between the deaf and partially hearing, preferring "hearing impaired" for both these groups. He also rehearsed the conflicts within the ranks of teachers of the deaf in the use of finger spelling and signing but he did not "exclude the possibility of manual communication in all possible circumstances". The most practical contribution to teaching was the paper by Nicholls in which he described his programme for teaching number to the E.S.N. child using the developmental concepts of Piaget. Many papers in this book are a useful introduction to some of the dynamic new developments and approaches in education and will be of interest to all who are professionally concerned with young children. It is good value at 50p.

CYRIL WILLIAMS

ERRATUM

SULA WOLFF. Critical Notice of: **Education, Health and Behaviour**. *J. Child Psychology and Psychiatry* **13** (2) 129-133.

The first line of the fifth paragraph on page 130 should read as follows: "2.53 per cent of 9- to 11-yr-old children were intellectually retarded, . . .". Also on this page, lines one and two of para. 6 should read as follows: "Reading retardation, defined as a reading age of 28 months or more below that predicted on the basis of age and I.Q., was present in 3.7 per cent of children . . .".

REMOVING INFANT RHESUS FROM MOTHER FOR 13 DAYS COMPARED WITH REMOVING MOTHER FROM INFANT

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INTRODUCTION

A NUMBER of studies have shown that temporary separation from the mother may affect the behaviour of infant rhesus monkeys for some time after reunion with her (refs. in Hinde and Spencer-Booth, 1971). In most of these experiments the separation involved temporary removal of the mother, the infant remaining in the same physical and social environment in which it had lived previously: in this way, any additional effects which might arise if the infant were moved temporarily to a strange environment were avoided. In the present experiment the procedure was reversed, the infant being removed to a strange cage and the mother left in her familiar environment. It was predicted that the effects on the infant of this treatment, involving both separation from the mother and the trauma of a strange environment, would be more severe than those of mere removal of the mother.

MATERIALS AND METHODS

Subjects

The experiments were performed with rhesus monkeys living in small captive groups. Each group consisted of an adult male, 2-4 females and their young. Five mother-infant pairs were used, the infants (3 female and 2 male) being 30-to 32-weeks-old at the time they were removed from their mothers. Data on these "infant-removed" infants are compared with those from 6 (4 female and 2 male) "mother-removed" infants as published previously (Spencer-Booth and Hinde, 1971).

Accommodation

Each group occupied an outside pen ($5.50 \times 2.44 \times 2.44$ m) connecting with an indoor room ($2.29 \times 1.83 \times 1.37$ m) (see also Hinde and Rowell, 1962). While separated from their mothers, the infants were kept in a cage ($1.13 \times 1.00 \times 1.18$ m) in an indoor room about 50 m from and out of sight of the group: they were visually but not auditorally isolated from other monkeys in the room. The latter were caged singly or in pairs, and were not undergoing separation at the time.

Methods

Each infant was removed from its mother when between 30- and 32-weeks-old and placed in the indoor cage for 13 days, after which it was returned to its mother

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in the group cage. The data used in this analysis were concerned only with 3-4 days before the infant's removal, the separation period, and 4 weeks after the infant's return.

At 10-00 hrs on 3 of the 4 days before the separation, routine data on mother-infant interactions and the infant's activity while off its mother were recorded (see Spencer-Booth and Hinde, 1967). These watches were continued until the infant had been off its mother for 2 hr or until 14-30 hrs, whichever was earlier.

At 10-00 hrs on day 4, the infant was caught in the outside pen and taken to the indoor room, where data on activity and vocalizations were recorded for 2 hr. These watches were repeated on days 5, 9, 12, 15 and 16. At 10.00 hrs on day 17, the infant was returned and data collection began immediately as on days 1-3. Similar data were collected on days 18, 19, 21, 23, 30, 37 and 44.

For observations in the home pens the observer was in a small hut, 7.7 m from the end of the pen, and was visible to the monkeys through a window. The monkeys were thoroughly habituated to this procedure, and there was no reason to believe that the observer's presence influenced their behaviour in any way. For observations in the indoor cage the observer was seated about 2 m from and in full view of the infants: in this case the animal's behaviour could be affected by sudden movements by the observer.

More limited data on the mothers were also collected. On one of the four pre-separation days, and on days 4 and 15 within the separation period, the mother's locomotor activity and vocalizations were recorded from 10-00 to 12-00 hrs.

Measures

The following were used in this analysis:

Time off. The percentage of half min watched in which the infant was off the mother and all other animals.

The relative frequency of rejections ($R/(A + M + R)$). Every time the infant got on or tried to get on the mother's nipple we recorded whether it was through the mother's initiative (M) or the infant's: in the latter case the infant could be accepted (A) or rejected (R). From this was calculated the proportion of the total number of times the infant got on the nipple, or attempted to do so, which were rejected.

Infant's role in making successful nipple contacts. This is given by the ratio $A/(A + M)$.

Infant's role in breaking nipple contacts. When the infant came off the nipple we recorded whether it was the infant's initiative (I), the mother's initiative (M') or mutual. The ratio $I/(I + M')$ gives a measure of the infant's role.

Time at a distance from mother (> 60 cm). The percentage of half min in which the infant was off in which it was recorded more than 60 cm from the mother (60 cm is roughly the distance a mother can reach in a hurry, and was assessed in relation to the 120 cm divisions of the wire netting).

Infant's role in maintaining proximity ($\%Ap - \%L$). The percentage of occasions that the distance between mother and infant decreased from more than 60 cm to less than 60 cm (approaches) or increased from less to more (leavings), that were due to movement by the infant, were calculated. The difference between the proportions of approaches and of leavings which were due to movement by the infant gives a measure of the infant's role in maintaining proximity which is relatively

independent of the absolute levels of activity of the two animals (Hinde and Atkinson, 1970).

Whoop calls. The mean number of whoop calls per hundred half min in which the infant was off its mother (infant) or per hundred half min (mother).

Locomotor activity. The outside pen was subdivided into 16 "boxes" (upper and lower sections and eight equal floor areas) and the indoor cage into six. Locomotor activity was assessed in terms of the number of boxes entered per half min watched for the mother, and per half min off the mother for the infant.

Activity when active ($> 5/ > 1\%$). The number of half min in which the infant or mother entered > 5 boxes, as a percentage of the number in which it entered more than one.

Sitting ($\%S$). The number of half min in which the animal was recorded sitting still and not engaged in any obvious activity, as a percentage of the number in which it was off its mother (infant) or the number watched (mother).

Rough-and-tumble social play ($\%R\&T$). The number of half min in which the infant engaged in rough-and-tumble social play, as a percentage of the number it was off its mother.

Approach/withdrawal social play ($\%A/W$). The number of half min in which the infant engaged in approach/withdrawal social play, as a percentage of the number it was off its mother.

Method of analysis

Data were analysed separately for each animal for each watch, and were grouped as follows. The mean of the data was determined for days 1-3, days 18-23 and days 30-44, for each infant. The effects of the separation period were assessed by analysing the data for each day of that period (days 4, 5, 9, 12, 15, 16) separately. For changes between periods, Sign tests (two-tailed) were used, while for comparisons between groups, Mann-Whitney U tests (two-tailed) were employed.

It must be emphasized that comparisons of infants or of mothers between infant-removed and mother-removed groups during the separation period are limited by the difference in size between the outside runs and the indoor cages.

RESULTS

Comparison of groups before separation

The mother-removed and infant-removed groups did not differ significantly on any of the measures of mother-infant interaction, or of infant behaviour when off mother.

Behaviour of the infants during separation (Fig. 1)

Initial hypoactivity was shown by the two males (Whisky and Matthew). On release into the indoor cage they immediately climbed into a top corner and stayed there for most of the 2 hr watch. They first moved only after 1 hr 21 min and 1 hr 45 min respectively, and when they did so their movements were slow and cautious. Matthew did not call at all, while Whisky only gave soft whoop calls when other animals in the room called. By the next day, Matthew had just started to call, while Whisky's calling had decreased from that of the previous day. They were both moving

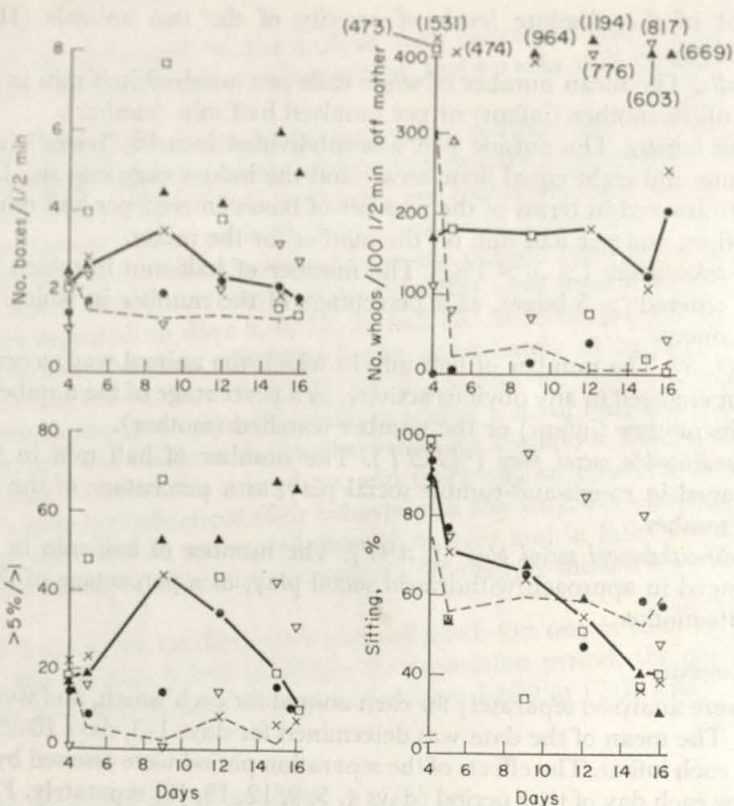


FIG. 1. Behaviour of infants during the separation period.

The symbols indicate individual infant-removed infants, the closed circle and the inverted triangle representing the data for the two males. The continuous line shows the medians for the infant-removed infants, the discontinuous one those for mother-removed infants obtained in the earlier study. Top left—locomotor activity, measured by the number of "boxes" entered per half min. Top right—whoos calling. Bottom left—activity when active. Bottom right—percentage of half min sitting doing nothing.

around more. On day 9, Whisky seemed to be suffering from exhaustion: his activity and calling had decreased, and although he was still whooping fairly often, he was eating very little, moving around slowly and sometimes falling over. Matthew's activity and calling continued to increase steadily. By day 12, Whisky had recovered considerably; he was more active and his calling had increased markedly, but he still spent much time inactive. Matthew showed a further increase in activity and calling. By day 15, the calling of both had increased again, but Matthew's activity had decreased very slightly. On day 16, Whisky's calling had decreased considerably but he was still quite active. He clung to the cage bars and flung his head back. Matthew's calling had increased, but his activity had decreased slightly and he was nail-biting and thumb-sucking.

Although one of the females was immobile for 20 min after release into the indoor cage, the others became active immediately. All three thereafter whooped frequently,

and were active for much of the time, though they also frequently sat inactive. They sometimes growled at the observer. One made frantic scrabbling movements along the sides of the cage and another frequently ground her teeth. On days 5 and 9 all three showed a progressive increase in locomotor activity, accompanied in two cases by some decrease in calling. By day 12, activity was decreasing and they spent longer periods eating. The activity of two of these females decreased further by days 15 and 16, and they showed signs of depression. One sat huddled to the wall for much of the time. All three were noticeably unresponsive to the observer and to room noises. One, however, still scrabbled intermittently at the sides of the cage, and thus had a high activity score, and still called often. All three showed some stereotyped pacing of the cage. By this time all five infants had the typical depressed physical appearance of separated infants. Their coats were raised and matted, their cheeks sunken and bodies hunched.

The individual differences in the pattern of responding over the separation period, as well as the differences in cage-size, limit the usefulness of comparisons with infants of the mother-removed group during the separation period. In general the sorts of behaviour shown were qualitatively similar in the two groups, but the fear and associated immobility of some of the infant-removed infants was more marked than anything seen in the mother-removed infants. Furthermore, the searching behaviour and/or hyperactivity was more marked and longer-lasting in the infant-removed group: perhaps for this reason the onset of depression was delayed.

To be more specific, the initial median frequency of whoo calling was somewhat higher in the mother-removed group, owing largely to the hypoactivity of the two males in the infant-removed group. However the difference was not significant: indeed, one of the infant-removed infants called over twice as often as any other infant in either group on day 4. Subsequently the situation was reversed, the medians for the mother-removed group being lower (day 12, $p = 0.03$; day 15, $p = 0.004$; days 5, 9 and 16, *n.s.*).

Comparisons of locomotor activity between the two groups are especially liable to be influenced by the differences in cage size, but it is noteworthy that, while the median number of boxes entered was (not-significantly) higher for the mother-removed infants on the first day of separation, it was lower on all subsequent days (days 5 and 12, $p = 0.004$; day 15, $p = 0.03$; days 4, 9 and 16, *n.s.*; Mann Whitney *U* test, two-tailed).

The proportion of minutes in which the infants were recorded sitting showed, as might be expected, opposite trends. At first it was higher for the infant-removed group (day 4, $p = 0.02$; days 5 and 9, *n.s.*), but subsequently non-significantly lower. The decrease in %S with time was not due merely to the increase in locomotor activity of the two males, but was characteristic of all individuals (Spearman rank order correlation with serial order of observation negative in all cases, $p < 0.05$ in two).

In conclusion, although individual differences amongst the infant-removed infants were marked, their behaviour during separation involved the same sort of changes as were found in the mother-removed group, but with considerable differences in degree. In particular, two animals showed initial fear and immobility, all later showed hyperactivity, and symptoms of depression appeared rather later.

Behaviour of mother during separation (Fig. 2)

Data were collected from four mothers on day 4 and from all five before separation and on day 14. While none gave whoo-calls during the pre-separation watch, all four watched on day 4 did so. They seemed extremely restless, alternating periods of sitting (%S was higher than pre-separation in all four) with periods of activity (No. of boxes entered higher than before separation in 3 out of 4 animals, and activity when active in all 4).

On day 14 whoo-calling had decreased virtually to zero. The frequency with which they were recorded sitting tended to be lower than on day 4 (3 out of 4 animals), but still higher than before separation (4 out of 5). Similarly, locomotor activity tended to be less than on day 4 (3 out of 4 animals) but still higher than before separation (4 out of 5).

Comparison with mothers from the mother-removed group are possible only on day 4. The mother-removed mothers were recorded sitting more than the infant-removed mothers ($p = 0.03$), tended to be less active (*n.s.*), and were less active when active ($p = 0.01$). However the frequency of calling showed no clear difference between the groups. In general, in so far as the differences in cage size permit comparison, the mother-removed mothers appeared to be more disturbed during separation than were the infant-removed mothers.

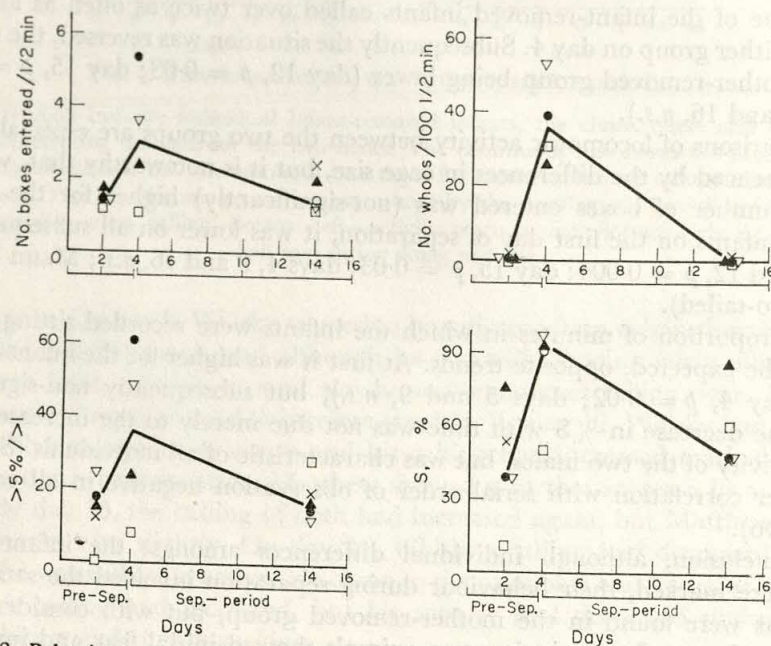


FIG. 2. Behaviour of mothers of infant-removed infants before and during separation. Symbols used for mothers are those used for their own infants in Fig. 1. Measures as in Fig. 1.

Infant behaviour after reunion (Fig. 3)

After reunion the behaviour of the infant-removed infants differed from their pre-separation behaviour in ways similar to, but less marked than, that seen in mother-removed infants. In no period did whoo-calling differ significantly from the pre-separation level. Locomotor activity was at first slightly lower, the difference for both the mean number of boxes entered per half min and for activity when active

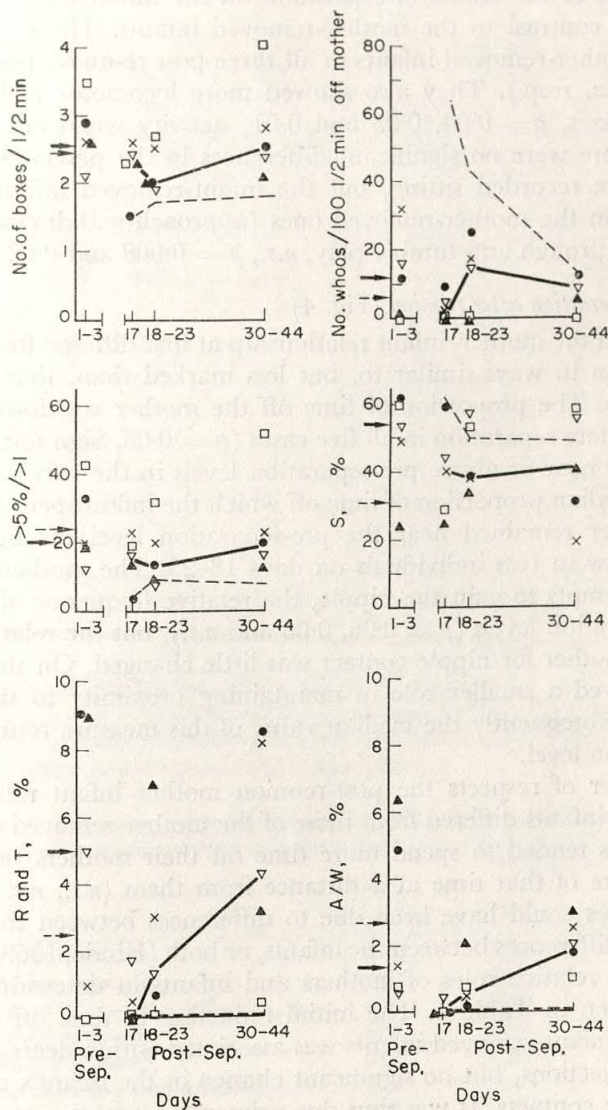


FIG. 3. Behaviour of infants before and after the separation period.

Symbols as in Fig. 1. Measures in top 4 graphs as in Fig. 1. Bottom left—percentage of half min in which rough-and-tumble play occurred. Bottom right—percentage of half min in which approach/withdrawal play occurred. The thick arrow indicates the pre-separation Median for the infant-removed infants and the thin arrow that for the mother-removed infants.

being significant for days 18–23 ($p = 0.06$, sign test): this difference had disappeared by days 30–44. The percentage of min in which they were recorded sitting tended to be similar to that before separation in all periods. Although social play was somewhat depressed in the early post re-union periods in most individuals, again in no period (except for approach/withdrawal on day 17) was the difference from pre-separation level significant.

The mildness of the effects of separation on the infant-removed infants represents a marked contrast to the mother-removed infants. The former whoo-called less than the mother-removed infants in all three post re-union periods ($p = 0.004$, $p = 0.03$ and *n.s.* resp.). They also showed more locomotor activity in all three periods (No. boxes, $p = 0.04$, 0.03 and 0.01 ; activity when active, *n.s.*, *n.s.* and $p = 0.004$). There were no significant differences in the percentage of minutes in which they were recorded sitting, but the infant-removed infants played significantly more than the mother-removed ones (approach-withdrawal play, *n.s.*, $p = 0.004$ and 0.004 ; rough and tumble play, *n.s.*, $p = 0.008$ and 0.02).

Mother-infant interaction after reunion (Fig. 4)

After reunion the mother-infant relationship at first differed from that obtaining before separation in ways similar to, but less marked than, that seen in mother-removed infants. The proportion of time off the mother was lower on the day of reunion than before separation in all five cases ($p = 0.06$, Sign test, two-tailed), but the median was near or above pre-separation levels in the two later post re-union periods. The median proportion of time off which the infant spent more than 60 cm from the mother remained near the pre-separation level throughout, though it tended to be low in two individuals on days 18–23. The mothers rejected few of the infants' attempts to gain the nipple, the relative frequency of rejections being below pre-separation levels ($p = 0.06$, 0.06 and *n.s.*), but the relative responsibility of infant and mother for nipple contact was little changed. On the day of reunion the infants played a smaller role in maintaining proximity to the mothers ($p = 0.06$), though subsequently the median value of this measure returned to close to its pre-separation level.

In a number of respects the post-reunion mother-infant relationships of the infant-removed infants differed from those of the mother-removed ones. The infant-removed infants tended to spend more time off their mothers (*n.s.*, *n.s.* and $p = 0.052$) and more of that time at a distance from them (*n.s.*, *n.s.* and $p = 0.008$). These differences could have been due to differences between the mothers of the two groups, to differences between the infants, or both (Hinde, 1969). Some measures relevant to the relative roles of mothers and infants in determining time off the mother are given in Table 1. The initial reduction in time off the mother after reunion in the infant-removed infants was associated with a decrease in the relative frequency of rejections, but no significant change in the infant's role in making or breaking nipple contacts. It was thus due primarily to greater receptiveness by the mothers to the infants' demands for nipple contacts. By contrast, in the mother-removed group the frequency of rejections and the infants' role in making nipple contacts changed little, but there was a marked decrease in the infants' role in breaking nipple contacts. Here, therefore, the decrease in time off was due primarily

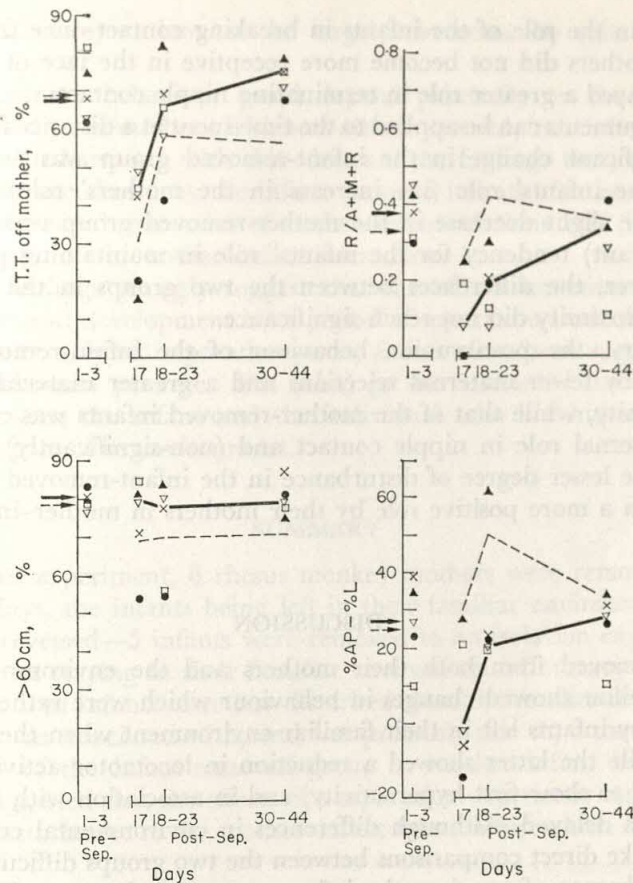


FIG. 4. Mother-infant interaction after reunion.

Symbols as in Figs. 1 and 3. Top left—total time off mother. Top right—relative frequency of rejections. Bottom left—proportion of time off mother spent at a distance from her. Bottom right—infants' role in maintaining proximity to mother when off her.

TABLE 1. RELATIVE ROLES OF MOTHER AND INFANTS IN NIPPLE CONTACTS

		Period (days)			
		Pre-separation	17	18-23	30-44
$R/(A + M + R)$	Infant-removed	0.38	0.08*	0.30*	0.34
	Mother-removed	0.33	0.26	0.42	0.31
	Sig. of inter-group difference, p	<i>n.s.</i>	<0.06	<0.01	<i>n.s.</i>
$A/(A + M)$	Infant-removed	0.94	0.90	0.92	1.0
	Mother-removed	0.89	0.92	0.93	0.92
	Sig. of inter-group difference, p	<i>n.s.</i>	<i>n.s.</i>	<i>n.s.</i>	<0.01
$I/(I' + M')$	Infant removed	0.58	0.95	0.47	0.55
	Mother-removed	0.52	0**	0.06**	0.20**
	Sig. of inter-group difference, p	<i>n.s.</i>	<0.09	<0.01	<0.02

Median values for Infant-removed and Mother-removed groups. * and ** indicates difference from pre-separation value with $p < 0.06$ and $p < 0.02$ respectively (Sign test).

to a decrease in the role of the infants in breaking contact once they were on the nipple: the mothers did not become more receptive in the face of the infants' demands and played a greater role in terminating nipple contacts.

Similar arguments can be applied to the time spent at a distance from the mother. The non-significant change in the infant-removed group was associated with a decrease in the infants' role (i.e. increase in the mothers' role) in maintaining proximity. The slight decrease in the mother-removed group was associated with a (non-significant) tendency for the infants' role in maintaining proximity to increase. However, the differences between the two groups in the infants' role in maintaining proximity did not reach significance.

In summary, the post-reunion behaviour of the infant-removed group was characterized by fewer maternal rejections and a greater maternal role in maintaining proximity, while that of the mother-removed infants was characterized by a smaller maternal role in nipple contact and (non-significantly) in maintaining proximity. The lesser degree of disturbance in the infant-removed group was thus associated with a more positive role by their mothers in mother-infant interaction after reunion.

DISCUSSION

Infants removed from both their mothers and the environment with which they were familiar showed changes in behaviour which were rather different from those shown by infants left in their familiar environment when their mothers were removed. While the latter showed a reduction in locomotor activity, some of the former tended to show first hyperactivity, and in association with this the onset of depression was delayed. Although differences in environmental conditions during separation make direct comparisons between the two groups difficult, it is probable that, in the absence of reunion, the infant-removed infants would have been the more profoundly disturbed.

However after reunion the reverse was the case. While the mother-removed infants continued to show obvious signs of disturbance for at least several weeks, the behaviour of the infant-removed infants soon returned to levels similar to those seen before separation. At least three types of explanation could be suggested for this difference:

(i) The effects of the experience on the infants are different in *kind* in the two groups, and produce more enduring effects in the mother-removed than in the infant-removed infants. While this possibility cannot be ruled out, it seems improbable in that both groups experienced separation from the mother and the infant-removed infants experienced the strange pen as well. A difference in the opposite direction would therefore be predicted, except as indicated in (ii) below.

(ii) Apart from the trauma associated with catching, the infant-removed infants had no unpleasant experience in the home pen. while the mother-removed infants lived there throughout the separation period. The latter could therefore have become adversely conditioned to the home environment, while the former did not and therefore behaved normally as soon as they were returned to it. This possibility cannot be ruled out by our data: if it does represent an important issue, it indicates at least

that the trauma of separation can be largely overcome by suitable subsequent experience.

(iii) Post re-union behaviour could depend primarily on the degree of disturbance suffered by the mothers. This was almost certainly much less in the infant-removed group. In harmony with this view are the findings that, (a) the smaller degree of disturbance shown by the infant-removed infants after reunion was associated with a more rapid restoration of mother-infant relations, and (b) this involved a greater maternal role in mother-infant interaction.

Thus these findings strongly suggest that the effects sometimes produced on infant behaviour and development by a period of separation from the mother may be due not (or not only) to separation *per se*, as has often been suggested for both human and subhuman primates, but (also) to the associated disturbance of the relationship between the infant and the individual who has hitherto formed the most important part of its environment.

SUMMARY

In a previous experiment, 6 rhesus monkey mothers were removed from their infants for 13 days, the infants being left in their familiar environment. Here the procedure was reversed—5 infants were removed to an isolation cage in a strange room, the mothers staying in their familiar environment. Contrary to expectation these infant-removed infants were less disturbed than the mother-removed infants. This difference was associated with, and was probably due to, a more positive role by the mothers of the infant-removed group in mother-infant interaction after reunion. It is suggested that the effects of a separation experience may be mediated in part by the disturbance to the mother-infant relationship which results.

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THE LEARNING OF GRAMMATICAL INFLEXIONS IN NORMAL AND SUBNORMAL CHILDREN

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INTRODUCTION

A STUDY by Lovell and Bradbury (1967), using a technique developed by Berko (1958), sampled 160 English educationally subnormal children aged 8–15. It was found that the ability of E.S.N. special school children to inflect, derive and analyse compound words improved little between 8 and 15 years. Furthermore, it appeared that the E.S.N. children failed to generalize a rule and transfer this rule to new words. Arising from this, the present writers posed two questions. Firstly, do E.S.N. children take appreciably longer to learn morphological rules than normal children of comparable mental age? Secondly, do E.S.N. children experience greater difficulty in applying such rules to new words?

The view that E.S.N. children fail to transfer has been strongly contested by Clarke and Clarke (1965), quoting evidence of a normal capacity for transfer both in manipulation and in classificatory skills. Moreover, it would seem intuitively improbable that any speaker of English will experience the same difficulty in learning the plural *schisms* having just met the singular *schism* as he would in learning the plural *foci* having just met with *focus*.

It was therefore decided to study the course of learning and generalization of morphological rules experimentally. The method adopted consists in essence of presenting children with a new "language" incorporating morphological rules of varying degrees of generality. Under these conditions, the hypothesis that E.S.N. children do not generalize is upheld if and only if, (a) these children learn each application at the same rate regardless of the generality of the rule it exemplifies, and (b) normal children show differential rates of instance learning as a function of the generality of the rule.

METHOD

The method used was an adaptation of the nonsense syllable study devised by Berko (1958). However, where Berko used nonsense material to test the generalization of rules of English grammar (e.g. one wug, two wugs), in the present study both the lexical material and the grammatical forms are artificial (e.g. one wug, two wugfa).

Subjects

Two groups were selected, the first consisting of 18 children aged 9·0–10·0 drawn from a special school for the educationally sub-normal. Boys and girls were

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equally represented and the choice of subjects was confined to children who did not stand out as being notably brighter or duller than their classmates. While it would have been desirable to obtain I.Q.s on an individual test, this was precluded by administrative difficulties. Teacher opinion was, therefore, accepted as a reasonably reliable indicator of mental level. Examination of school records showed the modal I.Q. within the school to be approximately 60.

The second group consisted of 9 boys and 9 girls aged 6.0-7.0, these being drawn from an infant school in a good working class area. For similar reasons, teacher opinion was again used for selecting average subjects, the modal I.Q. being taken as 100.

It is to be regretted that the mental age comparability of the two groups was only approximate. It was expected, however, that if the strong claim made by Lovell and Bradbury was correct, differences between the two groups in respect of language and learning should be sufficiently great as to far outweigh minor variations in global intelligence.

Experimental design

Three grammatical forms were selected: plural, past tense and possessive. Ten nonsense syllables were used for learning plurals *wug, bok, gus, nal, dob, cer, gim, med, zap*. These were depicted to the children as cartoon-like animals. The nonsense syllables used for learning the past tense were *jod, zag, mek, jer, res, gip, dib, nom, nen* and *fal*. These were depicted to the children as men performing various actions. The nonsense syllables used for learning possessives were *lus, esp, sib, tam, lun, rad, tor, ril, zig, and esk*. Again cartoon-like animals were drawn to represent the objects, this time wearing hats.

Three types of grammatical rule were employed. Rule 1, a "universal" rule, consisted of the nonsense syllable plus the suffix *fa*. Rule 2, a "dichotomous" rule, consisted of the nonsense syllable plus either *ze* or *en*. Rule 3, the "arbitrary" rule, used the nonsense syllable with a different ending for each "word" in a group of 10, viz. nonsense syllable plus *ge, so, re, oo, co, ed, du, si, ca, or pa*. The 18 normal and 18 subnormal children were allocated into one of three form-class/rule-type sub-groups (Groups A, B, and C) with equal numbers of boys and girls. The three rules were allocated to the three learning groups for the three semantic items in a Latin Square Design, viz.

Groups	Plural	Past	Possessive
A	Rule 1	Rule 2	Rule 3
B	Rule 2	Rule 3	Rule 1
C	Rule 3	Rule 1	Rule 2

By way of example *wug, bok, gus* represented the same "creatures" for all groups. However, the corresponding plurals for A groups were *wugfa, bokfa, gusfa*; for B groups they were *wugze, boken, gusze* (two variant endings); for C groups they were *wugge, bokso, gusre* (ten variant endings, one for each item in the list). Likewise, all groups learnt *jod, zag* and *mek* to describe actions. A groups learnt the past forms *jodze, zagen, mekze* (two variants), B groups learnt *jodge, zagso, mekre* (ten variants), and C groups learnt *jodfa, zagfa, mekfa* (universal rule).

Procedure

Initial learning. Each individual subject was first required to learn the plurals, pasts and possessives as indicated for each of 10 items to a criterion of one correct response for each item. The 10 items in the series were arranged according to a modified random order so that any given form-class was never repeated more than twice in succession. The first run through was essentially a demonstration, using cards featuring both the singular and the plural forms, verb stem and past forms, etc. *E* showed the card to *S*, saying e.g. "Here is a WUG (pointing). Now there are two (pointing); there are two WUGFA". The next card might feature either another plural, or a past, or a possessive. For the second and all subsequent runs the correct response did not appear on the cards. *E* would then read "Here is a WUG, now there are two, there are two . . ." *S* being required to supply the correct form. If *S* failed to answer correctly, *E* corrected his answer, and returned the card to the back of the pack. If successful, *S* was allowed to retain the card. This procedure was continued until *S* had "won" all the 10 cards, the number remaining in the pack diminishing in successive cycles.

The entire sequence was then repeated twice over with a further series of 10 cards each. The number of presentations of each item was recorded. Since the three series included 10 plurals, 10 pasts and 10 possessives, a perfect score (no repetition needed) would be 10 for each form-class, (and 10 for each rule), with higher scores indicating less efficient learning.

Learning sessions were on an individual basis with each child, the initial learning being completed in one session of 30-45 min.

Re-learning and transfer. Both re-learning and transfer were tested in the course of a second session, after an interval of 24 hr. The re-learning sequence was identical with the initial learning sequence and the same materials were used. Since the savings effect turned out to be considerable, re-learning was usually completed within 15 min. The transfer situation followed immediately. For each group this was identical to the initial learning situation apart from the fact that a different nonsense syllable was involved. Thus, corresponding to the initial learning of the plural of *wug*, the child was shown a different cartoon-line animal, named *lek*, and again asked to supply the plural. If rule 1 was the learnt plural, the answer of *lefka* was expected. The transfer test consisted of 30 items including ten for each rule, randomly distributed as in the initial learning, and was administered once only. This restriction was necessary to ensure that the procedure would be a true test of transfer. Correction of errors would have involved an element of learning with the transfer materials themselves.

RESULTS

Initial learning

Figure 1 shows the mean trials to completion separately for each of the three combination of rule with form-class. Separate graphs appear within each figure for each sex-ability group. In Fig. 2(a) the means have been pooled over all subject groupings to illustrate the main effects of sex and ability in relation to generality of rule.

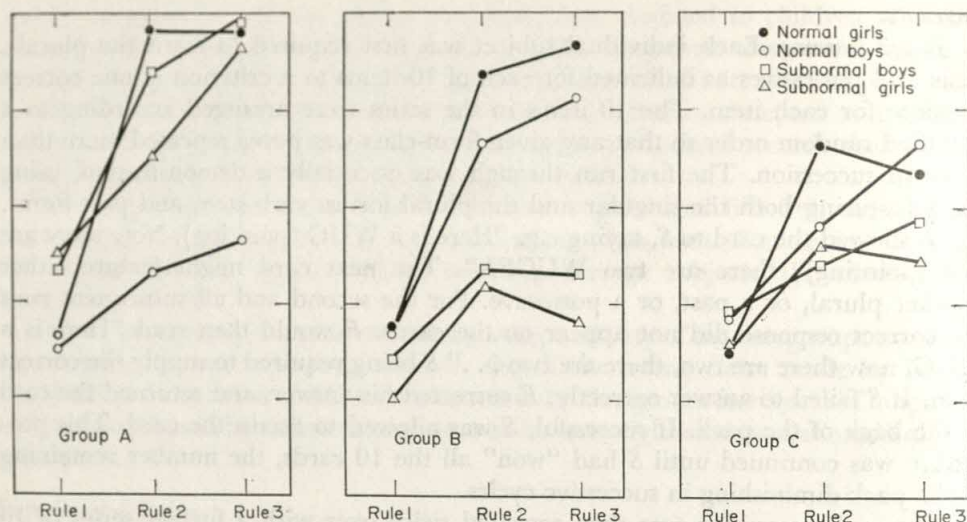


FIG. 1. Scores based on trials required for initial learning of a grammatical rule.

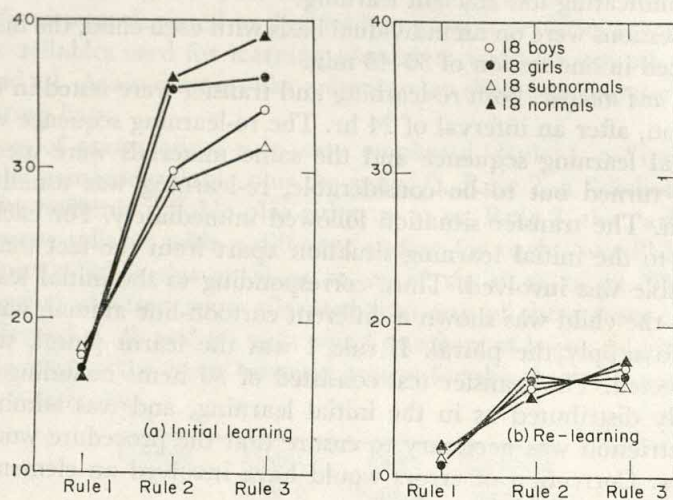


FIG. 2. Effect of rule: first order interactions with sex and ability.

The analysis of variance (Table 1) indicates the overwhelming effect of the main rule variable. The average scores are 17.06, 32.53, and 35.28 for the three rules in decreasing order of generality. These differences were tested for significance, using the Newman-Keuls test, based on the studentized range statistic q . All are significant at the 0.01 level.

TABLE 1. ANALYSIS OF VARIANCE: INITIAL LEARNING

Source of variation	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Between subjects	35	9614.77	—	
Ability	1	502.67	502.67	3.14 (<i>n.s.</i>)
Sex	1	114.08	114.08	<i>n.s.</i>
Ability $\times$ sex	1	690.07	690.07	4.31*
Groups	2	1442.46	721.23	4.51*
Ability $\times$ groups	2	2373.12	1186.56	7.41*
Sex $\times$ groups	2	276.50	138.25	<i>n.s.</i>
Ability $\times$ sex $\times$ groups	2	326.74	163.37	<i>n.s.</i>
Subjects within groups	24	3889.11	160.05	
Within subjects	72	10737.33		
Rule	2	6948.02	3474.01	86.96***
Rule $\times$ ability	2	448.11	224.05	5.61*
Rule $\times$ sex	2	203.39	101.69	2.55 (<i>n.s.</i>)
Rule $\times$ group	4	272.37	68.09	1.70 (<i>n.s.</i>)
Rule $\times$ ability $\times$ sex	2	279.07	139.53	3.49*
Rule $\times$ ability $\times$ group	4	345.83	86.46	2.16 (<i>n.s.</i>)
Rule $\times$ sex $\times$ group	4	90.45	22.61	<i>n.s.</i>
Rule $\times$ ability $\times$ sex $\times$ group	4	232.53	58.13	1.46 (<i>n.s.</i>)
Rule $\times$ subjects within groups	48	1917.56	39.95	

* Indicates $p < 0.05$; ** indicates $p < 0.01$; *** indicates $p < 0.001$.

While the facilitating effect of the general rule is consistent across sex and ability, subnormals are significantly quicker in rules 2 and 3 (rule $\times$ ability), and the nine normal girls require more trials for these less general rules than the other children in the sample (rule $\times$ ability $\times$ sex).

Differences between subjects do not follow any consistent pattern. Thus, from Fig. 1, it will be seen that subnormals in Group *A* required more presentations than subnormals in Groups *B* and *C*. These differences, which are not replicated in the normals, account for the significant main effect of groups as well as the interaction of groups $\times$ ability. Within the normals, boys attained criterion faster than girls, particularly in Group *A* (ability $\times$ sex).

Re-learning

Results for re-learning are shown graphically in Figs. 3 and 2(b). The analysis of variance (Table 2) again shows a highly significant main rule effect. Instances of the universal rule 1 are re-acquired with fewer errors than rule 2 or rule 3 ($p < 0.01$, Newman-Keuls procedure). The difference between rules 2 and 3 falls just short of the 0.05 level.

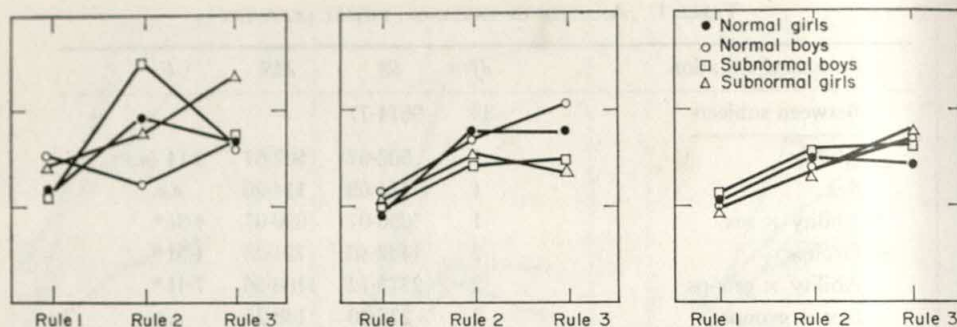


FIG. 3. Scores based on trials required for re-learning of a grammatical rule.

TABLE 2. RE-LEARNING

Source of variation	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Between subjects	35			
Ability	1	0.23	0.23	<i>n.s.</i>
Sex	1	0.75	0.75	<i>n.s.</i>
Ability $\times$ sex	1	2.67	2.67	<i>n.s.</i>
Groups	2	222.90	111.45	9.11**
Ability $\times$ groups	2	121.47	60.73	4.97**
Sex $\times$ groups	2	13.73	6.86	<i>n.s.</i>
Ability $\times$ sex $\times$ groups	2	3.24	1.62	<i>n.s.</i>
Subjects within groups	24	293.55	12.23	
Within subjects	72			
Rule	2	663.63	331.81	34.78***
Rule $\times$ ability	2	16.96	8.48	<i>n.s.</i>
Rule $\times$ sex	2	0.89	0.44	<i>n.s.</i>
Rule $\times$ group	4	15.60	3.90	<i>n.s.</i>
Rule $\times$ ability $\times$ sex	2	140.52	70.26	7.36**
Rule $\times$ ability $\times$ group	4	64.25	16.06	<i>n.s.</i>
Rule $\times$ sex $\times$ group	4	45.21	11.65	<i>n.s.</i>
Rule $\times$ ability $\times$ sex $\times$ group	4	115.83	28.96	3.04*
Rule $\times$ Subjects within groups	48	457.78	9.54	

Inspection of Fig. 2 suggests that the significant interactions as well as the main group effect are due largely to the erratic performances of sub-groups within Group A, where sub-normal boys required more trials in rule 2, and sub-normal girls in rule 3.

Transfer

The test used for transfer consisted of single presentations, each item being scored as a success or a failure. Thus the score for each subject represents the number of successes achieved over the 30 transfer items. Clearly, to obtain a score on a trans-

fer item, the subject must apply the appropriate rule. Rule 3 has no generality, so that transfer cannot be expected save by chance. The overall distribution of successes was 25 per cent out of a possible 360 for rule 1, 64 for rule 2, and 16 for rule 3. In view of the heavy predominance of rule 1 transfers, the results for all subjects have been summed over rules.

TABLE 3. TRANSFER TASK: MEAN SCORES

	A	Group B	C	All groups
Normal boys	16.3	11.0	13.0	13.4
Normal girls	11.0	12.3	10.0	11.3
Subnormal boys	0.0	9.0	4.3	4.4
Subnormal girls	4.0	11.0	10.3	8.4
All normals	13.7	11.7	11.5	12.28
All subnormals	2.0	10.0	7.3	6.44

TABLE 4. ANALYSIS OF VARIANCE: TRANSFER

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Ability	306.25	1	306.25	31.06***
Sex	6.25	1	6.25	1
Group	54.06	2	27.03	2.74 (<i>n.s.</i>)
Ability $\times$ sex	90.25	2	45.12	4.58*
Ability $\times$ group	162.50	2	81.25	8.24**
Sex $\times$ group	10.17	2	5.08	1
Between blocks	36.16	2	18.08	1.83 (<i>n.s.</i>)
Residual between subjects	266.67	23	9.86	

Means for transfer are shown in Table 3. The analysis of variance (Table 4) shows a highly significant ability effect, as well as significant effects for ability $\times$ sex and ability $\times$ group. Subnormal girls achieved a higher rate of transfer than subnormal boys, and the poor performance in subnormals was most apparent in Group A, and least in Group B.

DISCUSSION

While a number of interaction effects proved significant in each of the analyses, the only stable main effects were those for rule in initial learning and re-learning, and for ability in transfer. The main effect of Group on the re-learning is attributable to differences which appeared only in the subnormals and were not replicated in the normals. Similarly the interaction effects show no consistent pattern, and it is therefore safer to assume that they reflect a sampling error due to the small numbers in each cell. The following discussion will therefore centre on the two most salient findings:

- (1) At a comparable level of mental age, the universal rule leads to more rapid learning for both normal and subnormal children, with no advantage to the former.

(2) Subnormal children are less successful in the one-trial transfer task.

The hypothesis that E.S.N. children are unable to learn a general rule would have been upheld if and only if no significant differences had appeared between rules for E.S.N. children. The results both for initial learning and re-learning clearly contradict this prediction: instances of the universal rule are learnt more easily by both groups of children. Also, not only is there no significant interaction effect, but the advantage is to E.S.N. children in the re-learning of rule 1.

It should be emphasized that the rule was not directly taught: only instances were learnt and the rule was induced. Learning of the rule is inferred from the greater economy in learning instances of the universal rule. The experimental procedure is thus an attempt to mirror the learning of grammatical rules in language. It is an extension to morphology of the method used by Braine (1963) in the study of syntax.

The results do not indicate that the induction of grammatical rules is independent of intelligence. As the two groups were equated for MA rather than CA, they are at best an indication that such induction of rules does not constitute a specific area of retardation in E.S.N. children. It may be argued that fine differences would have been found with a larger sample and more accurate I.Q. estimates. It is clear, however, that specific retardation, if it exists in this area, is not gross. Since it has been shown that subnormal children do show gross specific retardation in some aspects of language (e.g. acquisition of "fringe" vocabulary, Mein and O'Connor (1968) and of transformations, Lovel and Dixon (1967)) the finding is not trivial.

The argument that normal children learn rules and E.S.N. children learn only instances is not upheld. However, once again, the present experiment is not critical as to the nature of the rule-learning exhibited by both. The model to which the experiment conforms is that of a phrase structure grammar. It is conceded that such a grammar is not adequate to an interpretation of all the distinctions of language (Chomsky, 1969; N. Chomsky, 1957, 1965; Bever, Fodor and Wexsel, 1965). Even within the restricted sphere of language behaviour of which we treat, at least three hypotheses are tenable: (1) children induce rules directly from instances of surface structure; (2) children interpret instances of surface structure by assigning to them a deep structure derived from prior innate language universals; and (3) children interpret instances of surface structure, using contextual clues as a guide, enabling them to assign a deep structure derived from universals of experience, i.e. the sensori-motor schemata elaborated before the acquisition of syntax (Herriot, 1970).

The significant positive difference occurred in the transfer experiment.* On the face of it, this is in contradiction to the results for learning and re-learning. It can only be because of the greater availability of the universal rule that such learning is easier than learning of the dichotomous and multiple exceptions rules. If no differences exist between E.S.N. and normal children for the learning situation, it is not easy to account for the inability of the former to apply the rule to new instances. In other words, the economy of rule learning is itself an instance of transfer.

* In view of the small size of sample, and rough matching for I.Q. the sex differences found will not be discussed.

More accurately, it is an instance of learning-set formation (Harlow, 1949), or of multiple discrimination learning (Gagne 1966).

The following interpretation is tentative. It will be recalled that in the transfer situation, subjects were given only a single opportunity to respond. It was therefore a test of "one-trial learning". It is possible that, when faced with a new problem, E.S.N. children are less ready than others to search among the strategies available to them for the one that yields the best fit. They are more inclined to revert to older more established strategies. E.S.N. children are more "impulsive" and less "reflective" (Kagan *et al.*, 1963). On the other hand, when feedback is given, their ability to correct indicates that initial failure was due more to lack of implementation of the relevant strategy than to its absence.

Some support for this interpretation comes from a recent study by Blacka (1970) who repeated Olsen's experiment on strategies of pattern identification, comparing normal and sub-normal children at ages 5 and 8. Blacka found that under free conditions (favouring "impulsive" responses, E.S.N. children at MA8 were greatly inferior to normal MA controls, while under the "constraint" condition (with strong inducement for "reflexion") this difference ceased to be significant.

Comparing the present results with those of Lovell and Bradbury, we note once again that these authors allowed only one opportunity for response. Therefore the results do not conflict with theirs, though the interpretation is different.

Finally, it should be added that whereas Lovell and Bradbury's study extended over the entire age range 8-15, the present study is confined to a single MA. The earlier study showed that little progress was made by E.S.N. children beyond MA8. Such a conclusion is backed by much additional evidence (Inhelder, 1968; Jackson, 1965; Lovell, 1968). The present experiment does nothing to inform it.

SUMMARY

Two groups of 18 children, one of average ability, the other drawn from E.S.N. schools were selected as of approximately MA6. Each subject was given a learning task requiring the induction of grammatical rules (to supply the appropriate nonsense-syllable ending to a nonsense syllable stem) for past, plural and possessive. The three rules varied in generality and were allocated to grammatical form classes in a perfectly crossed design. Both groups of children learned the more general rule more effectively, and no other differences were consistent. E.S.N. children were less able to apply the rule to a single presentation of a transfer example. The findings are examined for the light that they throw on the nature of specific retardation in E.S.N. children.

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BEHAVIOURAL CHARACTERISTICS OF CHILDREN IN RESIDENTIAL CARE IN RELATION TO INDICES OF SEPARATION

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INTRODUCTION

MANY THEORIES about "mothering", "separation", and "attachment" take as their starting point the assumption that children brought up in institutions show high rates of emotional and behavioural disturbance (Rutter, 1972). For the most part, this assumption is based on uncontrolled clinical observations and surprisingly little is known about the frequency, extent, and type of disturbance in children reared in an institutional setting. This paper aims to provide more systematic data on the adjustment of children living in two local authority Children's Homes, and on the experiences related to their care which are associated with emotional/behavioural disturbance.

The particular questions investigated in this present paper are:

(1) Do children in residential care of a local authority manifest greater disturbance of behaviour than their co-evals who remain in their own homes?

(2) What are the contributions of length of stay in care, number of different placements experienced by the child, and the age which a child is first admitted to care, to the level of maladjustment manifested by children separated from their families and subsequently institutionalized?

METHOD

Description of the Group Cottage Homes

Data were collected on 776 children in two large Group Cottage Homes run by the Children's Department (as it then was) of a large, urban Local Authority. The individual cottages formed the focus of a larger, five-year study of children in residential institutions for both normal and severely sub-normal children which has been fully described elsewhere (King, Raynes and Tizard, 1971).

The cottages varied in size, accommodating from 8 to 20 children. Most cottages contained both boys and girls, and with a few exceptions, family grouping was practised so that children of all ages were represented in each unit. Four cottages catered for boys only; one cottage accommodated children under 5 years of age,

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and one cottage contained only adolescent boys. Staffing ratios varied at different times, but ranged at their lowest from 1 : 15 to 1 : 4.3 at their highest in the first Home, and in the second Home from 1 : 10 to 1 : 5.

All the children under the age of 11 received their education at the primary and nursery schools within the grounds of the Home in which they were resident. No children from outside the Homes attended these primary schools. In contrast, all but 15 of the children over the age of 11 attended secondary schools run by the Local Education Authority. There was a deliberate policy of dispersion in operation, so that the secondary school children were educated in 60 different schools. The maximum number of these children in any one school was 22.

The type of school attended by the children can be seen in Table 1.

TABLE 1. SOCIAL CHARACTERISTICS OF CHILDREN IN CARE IN TWO LARGE GROUP COTTAGE HOMES

	No.	%
<i>Age</i>		
Below 5 yr	80	10.31
5yr-7yr 11mths	146	18.81
8yr-10yr 11mths	196	25.26
11yr-14yr 11mths	265	34.15
15 yr and over	89	11.47
<i>Sex</i>		
Boy	457	58.89
Girl	319	41.11
<i>Legitimacy</i>		
Legitimate	508	65.46
Illegitimate	258	33.25
Unknown	10	1.29
<i>Colour</i>		
Not coloured	599	77.19
Coloured	177	22.81
<i>Types of school attended</i>		
Nursery	81	10.44
Internal Primary*	366	47.18
Secondary Modern	251	32.35
Grammar	2	0.26
Special	42	5.41
Other schools*	15	1.93
Not at school	16	2.06
No information	3	0.39

* See text.

Data collection

The background data on the children were collected from regularly reviewed and up-dated case records prepared by Child Care Officers, supplemented where necessary by interview with the child's houseparents.

The measures of adjustment consisted of the behaviour scales developed by Rutter (1967) and used subsequently on the Isle of Wight studies (Rutter, Tizard and Whitmore, 1970). Houseparents completed the 30 item Scale A for each child

in their cottage. This is the form normally completed by parents. The children's teachers were asked to complete the 26 item Scale B on each child.

The Child Behaviour Rating Scales have been found to have high reliability and good validity in a variety of epidemiological studies of large populations of normal children (Rutter, Tizard and Whitmore, 1970). However, at the time of our study normative data were only available for the age range 9-11 yr. Accordingly, contrast data on children not in Residential Care were collected only for those attending Secondary Schools. Teachers in secondary schools were asked to complete a second Scale B for the next (unnamed) child on the class list of the same sex and age as the child in care.

In the event, we did not obtain completed Behaviour Scales on all the children. One housemother refused to co-operate, as did some secondary school teachers. The position was further complicated by a postal strike during which several set of questionnaires went astray. Since this study was not the central focus of the project, we did not request over-worked houseparents to complete further schedules. Altogether both scales were completed on 584 children (or 75.3 per cent of the total). The analyses reported below refer to this reduced sample.

RESULTS

Amount of deviant behaviour

It had been found previously that children who scored 13 or more points on the parental scale, or 9 or more points on the teachers' scale had a high probability of displaying psychiatric disorder. These cut-off points were confirmed in the Isle of Wight studies, and have been used here to categorize the children as "deviant" (scoring at or above the cut-off point) or "non-deviant" (scoring below the cut-off point).

Table 2 shows the proportion of children at different age groups who were rated as deviant by their houseparents. Because of the marked sex differences in the epidemiological studies, the results are presented separately for boys and girls.

TABLE 2. PROPORTION OF CHILDREN IN TWO GROUP COTTAGE HOMES MANIFESTING "DEVARIANT" BEHAVIOUR AS ASSESSED BY HOUSEPARENTS

	0-4.11	5.0-7.11	8.0-10.11	11.0-14.11	15+	Total
(i) No. of boys in each age group scoring ≥ 13 on Scale A (houseparents)						
<13	18	62	58	74	18	230
≥ 13	12	28	25	31	2	98
% ≥ 13	40.00	31.11	30.12	29.52	10.00	29.88
(ii) No. of girls in each age group scoring ≥ 13 on Scale A (houseparents)						
<13	39	33	52	53	21	198
≥ 13	5	15	17	16	5	58
% ≥ 13	11.36	31.25	24.64	23.19	19.23	22.66

Note. These data refer to the 584 children on whom both behaviour scales were completed.

It should be noted that the proportion of deviant boys (30 per cent) is not significantly higher than that of deviant girls (23 per cent) ($\chi^2 = 3.47$, $0.10 > p > 0.05$).

For the most part, the teachers' assessment of the children's behaviour parallels that of the houseparents. This can be seen in Table 3. This time, the sex difference

TABLE 3. PROPORTION OF CHILDREN IN TWO GROUP COTTAGE HOMES MANIFESTING "DEVIA"NT" BEHAVIOUR AS ASSESSED BY TEACHERS

	0-4.11	5.0-7.11	8.0-10.11	11.0-14.11	15—	Total
(i) No. of boys in each age group scoring ≥ 9 on Teacher's Scale						
<9	22	54	48	67	12	203
≥ 9	8	36	35	38	8	125
% ≥ 9	26.67	40.00	42.17	36.19	40.00	38.11
(ii) No. of girls in each age group scoring ≥ 9 on Scale B						
<9	39	38	45	42	19	183
≥ 9	5	10	24	27	7	73
% ≥ 9	11.36	20.83	34.78	39.13	26.92	28.52

is more apparent. Overall, teachers rated 38 per cent of boys and 29 per cent of girls as deviant (i.e. scoring 9 or more points on Scale B). This difference is statistically significant at $p = 0.02$ ($\chi^2 = 5.49$).

Thus a high proportion of children in the two local authority group cottage homes manifest "deviant" behaviour as assessed independently by both their houseparents and their teachers. It should also be noted, however, that over half the children did *not* obtain deviant scores on either the teachers' or the houseparents' rating scales. To establish whether the degree of deviance found in this group of children is higher than that in the normal population, we compared their data with three other sets of data using the same behaviour scales on children living in their own homes. The first comparison is with data collected on the Isle of Wight study (Rutter, Tizard and Whitmore, 1970).

TABLE 4. CHILDREN IN CARE COMPARED WITH ISLE OF WIGHT NORMATIVE DATA

	% Deviant		
	In Care	Isle of Wight	Inner London
Scale A (parents or houseparents)			
Boys	29.79	8.06	—
Girls	23.91	5.56	—
Scale B (Teachers)			
Boys	38.83	10.04	25%
Girls	36.96	5.05	13%

Note. This analysis is confined to 326 of the In-Care Group aged 8 yr-14 yr 11 months; the Isle of Wight Group were aged 10-12 yr.

In order to compare the results of the present study with those on the Isle of Wight, we have to restrict the age range of children. The Isle of Wight studies provide normative data for the use of both Scale A and Scale B for children aged 10-12 yr. Within that age range, behaviour showed little variation with age. We decided, therefore, that it would be reasonable to look at children in care aged 8-14 yr—two years either side of the standardization age range. The results of these comparisons can be seen in Table 4.

On the houseparents' ratings, 3.7 times as many boys in care and 4.3 times as many girls in care are found to be deviant (i.e. to score 13 or more points on Scale A). On the teachers' ratings, 3.9 times as many boys and 7.3 times as many girls are found to be deviant (i.e. to score 9 or more points on Scale B). These differences

are statistically significant (for Scale A, $\chi^2 = 82.82$, $p < 0.001$ for boys and $\chi^2 = 61.17$, $p < 0.001$ for girls; for Scale B, $\chi^2 = 123.09$, $p < 0.001$ for boys and $\chi^2 = 183.29$, $p < 0.001$ for girls).

It is arguable that a comparison of children in care with children living in their own homes on the Isle of Wight is not of much validity because the socio-economic composition of the two populations is unlikely to be similar. It might be thought that the children in care would not be significantly more deviant than a matched group from the same socio-economic background. Although social-class was not strongly related to ratings in deviancy within the Isle of Wight population, a more recent partial replication of that study in which one of us (WY) has been involved, has found that there are indeed increased rates of deviancy as assessed by teachers' Scale B in an underprivileged inner London Borough. The proportion of 10-year-olds scoring 9 or more was 25 per cent boys and 13 per cent girls (Berger and Yule, 1972).

The two Children's Homes studied served the London area, so that the population studied in the latter study is perhaps more closely comparable with our "children in care". Again, we find that the children in care are rated by their teachers as significantly more deviant (for boys, $\chi^2 = 21.09$, $p < 0.001$; for girls, $\chi^2 = 31.34$, $p < 0.001$).

TABLE 5. TEACHERS RATINGS OF CHILDREN IN CARE
AND MATCHED CONTROLS IN SECONDARY SCHOOLS

AND MATCHED CONTROLS					
			Non-deviant	Deviant	
In Care Control			81 (63.28%)	47 (36.72%)	
			111 (86.72%)	17 (13.28%)	
$\chi^2 = 17.52, p < 0.001$					
Group	N	Mean B-score	SD	t	p
In Care	128	7.34	7.50	4.41	<0.01
Controls	128	3.89	4.70		

This finding is replicated in our study of secondary school children. Of the 350 or so children aged over 11 yr and attending secondary schools, matched control forms were returned on 128. As Table 5 shows, the children in care differed significantly from the matched controls both in their mean scale scores, and in the proportion found to be deviant. The sexes have not been treated separately in Table 5. The importance of Table 5 lies not in the level of difference found (since we do not know how representative the returns were) but rather in indicating that when we extend the use of the behaviour scale outside its normal range, large differences in the expected direction are still obtained.

We can summarize our findings thus far as follows:

- (1) Not all "children in care" in our studies are perceived either by their house-parents or their teachers as deviant.
- (2) Significantly more "children in care" are rated as deviant by both house-parents and teachers than are children whose homes are on the Isle of Wight.
- (3) Significantly more "children in care" of secondary school age are rated by

their teachers as deviant as compared with children attending the same schools but who are living in their own homes.

(4) Significantly more "children in care" than those living with their own families in a working class borough in London are rated by their teachers to be deviant in their behaviour.

All our data demonstrate that the children in these two local authority group cottage homes are more likely to be maladjusted than their peers living in their own homes. Thus, the answer to our first question is clear. However, differences between the age and sex of the children are clearly important sources of variation which need further examination.

Deviancy and separation experiences

We can now consider the behaviour of the "children in care" in more detail and examine the way in which deviant behaviour is related to some of the separation experiences which these children have encountered. We think that it is reasonable to use the number of separate placements "in care" experienced by the children as an indirect index of their actual number of separations from their families of origin.

Table 6 shows the range of institutional experiences of the total sample of children. It can be seen that 60 per cent of the children were first placed in care before their fifth birthday. Nearly 80 per cent of the sample had been in their current placement for 9 months or more. For most children, this placement was not their first experience of separation. Almost half the children had spent more than half their lives in

TABLE 6. SEPARATION AND INSTITUTIONALIZATION EXPERIENCES

	<i>N</i>	%
<i>Age at first placement</i>		
Below 12 months	134	17.27
1yr-1yr 11mths	113	14.57
2yr-4yr 11mths	217	27.97
5yr-9yr 11mths	207	26.68
10yr-14yr 11mths	103	13.28
15yr or later	2	0.26
<i>Length of current stay</i>		
Less than 2 months	22	2.84
2-8 months	143	18.43
9 months or longer	611	78.76
<i>No. of placements</i>		
1	86	11.09
2-5	656	84.56
6-10	33	4.25
11-20	1	0.13
<i>% of life spent in care</i>		
0-25	209	26.94
26-50	219	28.23
51-75	173	22.30
76-100	174	22.56

Note. This table describes the total sample of 776 children.

care. Thus, it can be seen that this group of children had been deprived of normal family life and exposed to institutional care for a large part of their lives.

In examining the relationship between behavioural adjustment and placement experiences, we have looked only at the teachers' ratings as these are likely to be less contaminated.

The case records did not indicate whether the children's first separation experience from their own families of origin were different from the time of first placement "in care", we have assumed that the earliest placement in care was synchronous with the first familial separation.

Table 7 presents the average teacher rating for each of the subgroups according to separation and placement experiences.

TABLE 7. TEACHERS RATINGS AND SEPARATION/INSTITUTIONALIZATION EXPERIENCES

	Boys			Girls		
	<i>N</i>	<i>X</i>	σ	<i>N</i>	<i>X</i>	σ
<i>Age at first placement</i>						
< 12mths	59	8.7	6.52	58	6.8	6.08
12-23mths	52	8.5	5.99	42	6.5	5.81
24-59mths	111	7.9	5.91	77	6.5	5.99
5yr-9yr 11mths	93	6.5	6.16	61	7.6	7.55
10yr+	39	8.6	7.93	29	4.6	5.05
Total	354	7.8	6.46	267	6.6	6.36
<i>% Life in care</i>						
$\frac{1}{4}$	90	7.9	6.82	57	5.4	6.19
$\frac{1}{2}$	111	7.3	6.53	68	6.5	6.95
$\frac{3}{4}$	76	7.5	6.26	77	6.7	5.51
All	77	8.7	5.94	65	7.4	6.76
Total	354	7.8	6.46	267	6.6	6.36
<i>Length of current stay</i>						
2mths	11	6.7	4.26	6	3.7	3.14
2-8mths	66	6.1	5.22	55	6.1	6.18
9+mths	277	8.3	6.60	206	6.8	6.45
Total	354	7.8	6.46	267	6.6	6.36
<i>Number of placements</i>						
1	38	6.6	5.58	25	5.0	4.85
2-5	296	8.0	6.68	237	6.6	6.42
6-10	20	6.5	3.85	5	13.4	7.36
Total	354	7.8	6.46	267	6.6	6.36

Note. This table relates to the 621 children on whom teacher's ratings were returned.

Age at first placement (Table 7a) shows no consistent relationship with teacher's ratings of behaviour.

We have used two indices of the length of time away from family of origin. Firstly, we calculated the total percentage of the child's life which had been spent "in care", regardless of the place in which the care was provided (Table 7b). Secondly, we established the length of time the child had been resident in the insti-

tution in which the study was undertaken (Table 7c). Looking at each of them in turn, we see that there is a slight tendency for the data to support the proposition that the greater the proportion life spent in care, the more likely it is that the child will be rated as maladjusted. However, since the associations are all rather slight, it is probable that we are examining merely chance fluctuations.

The data on length of current placement (Table 7c) again show only slight evidence to support the argument that the greater the length of current stay the child experiences, the more maladjusted he is likely to be.

The last index of separation experiences we were able to examine was the number of different placements in care (Table 7d). The data suggest that children who are experiencing their first placement in care are likely to be rated as less maladjusted than the remainder. Because of the small numbers involved, one can say nothing about the children who experienced 6 or more placements.

These data provide little in the way of support for the argument that the age at which a child first leaves home or the number of separate surrogate homes he encounters as a result of separation from his own family are related to later behaviour.

DISCUSSION

This investigation suffers from a number of weaknesses. The data were gathered incidentally to a larger study, and the fact that incomplete behavioural data were obtained on 25 per cent of the children might have resulted in biased results. However, a careful examination of the differing age groups in Table 3 shows that the differences are still as great in the primary school children where the percentage of returns was much higher. There is no reason to suppose that refusal to fill in a questionnaire by schools was in any way related to the disturbance of the children in care. Moreover, even if we assumed that all the non-completed questionnaires scored in the non-disturbed range, the rate of disturbance among the children in these two homes would still be very high.

The findings show that emotional and behavioural disorder (as assessed by questionnaire) was significantly more common among children living in two large group Cottage Homes than among children in the general population. The results apply only to the two Homes studied. However, group cottage homes are often regarded as "the end of the line". They are places to send children when all other placements have failed. Thus, the children in this study may well have been disturbed before placement in these homes. Even so, other studies suggest that the findings probably apply generally to children in care. Thus, Wolkind and Rutter (1973) using similar measures of behavioural disorder in total population studies of 10- to 11-year-old children living on the Isle of Wight and in an inner London borough also found high rates of disturbance in children who had been in care for as little as one week. Mapstone (1969), using the Stott scale in a Nationally based sample, also found that children in care included a higher proportion with maladjustment than did the general population. It may therefore be accepted that children in care are a "high-risk" group for emotional/behavioural disturbance.

Why do these children constitute such a high risk group? It does not appear

from our findings that behavioural disorder is related to the age at which a child is removed from his family, nor to the number of such placements, nor their length.

We have omitted to examine the reason for the child being removed from parental care. This was not accidental. As mentioned earlier, our source of information on separation was the case records, and surprisingly these rarely provided any information on why the child came in to care. The administrative categorization then in use (Section 1 or 2 of Fit Person Orders) was always recorded, but an examination of the proportion of deviant children in each category failed to reveal any association. That is, children who were placed in care voluntarily at the request of their parents were no more or no less deviant than children placed in care by a court order.

Since most children in care are only identified *after* they have been separated from their families, one can never be certain to what extent the subsequent "maladjustment" is a continuation of previous behaviour, a reaction to separation, or a result of the quality of substitute care. There is some evidence from the studies of monkeys (Spencer-Booth and Hinde, 1967) that those monkeys who reacted most severely to separation from their mothers were those who were already least well adjusted. Likewise at the human level, there is some evidence that children who react worst to hospital admission were less well adjusted prior to admission (Stacey *et al.*, 1970). Future studies in this area cannot ignore the quality of the pre-separation adjustments.

In conclusion, we have shown that there is a higher rate of disturbed behaviour in children in care in two large Group Cottage Homes. For the most part, the children were in long stay placements, and girls were found to be no less disturbed than boys. The case for the increase in maladjustment being in any way related to the separation experiences which we were able to examine must remain "not proven". More work needs to be done on the child's experiences and adjustment both prior to and during placement.

SUMMARY

Children in two large Group Cottage Homes were rated on standard behaviour ratings scales by both their houseparents and their teachers. They were found to be significantly more maladjusted than their peers living at home. Attempts were made to relate the behavioural ratings to a variety of indices of the childrens' separation experiences.

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EXCLUSION FROM SCHOOL

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INTRODUCTION

THIS study arose from the observation of one of us (R.Y.) that many children excluded from school were seriously educationally retarded and psychiatrically disturbed, and that it was often very difficult indeed to make alternative educational arrangements for them. Little attention has so far been given in the literature to children whose behaviour cannot be tolerated by their teachers. Robins (1966), in her follow-up study of child guidance clinic attenders in America, found that 36 per cent of children excluded or suspended from school were sociopathic in adult life. However, the act of exclusion did not itself contribute to the genesis of persistent, antisocial behaviour in children, nor was there any evidence that it led to improved behaviour. Exclusion from school was merely a pointer to other factors involved in the etiology of sociopathy. In an investigation of a home treatment programme for low income multiproblem families with severely disturbed children, Levine (1964) assumed that children excluded from school would be suitable index cases. The families of seven New York boys excluded from school were studied but not described in any detail.

In Edinburgh exclusion follows a decision by the head teacher, after consulting with the Director of Education, that a child's behaviour is such that he can no longer be tolerated within the school.

AIMS

The aims of the present study were; (1) to establish the size of the problem; (2) to examine the factors leading up to a child's exclusion from school, especially to discover whether this tends to be an arbitrary act on the part of a teacher or a pointer to serious pathology in the child; (3) to describe the children involved, their family and social background; and (4) to determine what alternative school arrangements were made for the children and whether the educational and psychiatric provisions available were adequate to meet their needs.

METHOD

During the two school years between August 1967 and July 1969, 31 children (including two pairs of siblings) were excluded from their schools. This group did not include children suspended from school for only a few days. Ten other children

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were attending the Edinburgh Educational Child Guidance Centre or the Department of Psychological Medicine, Royal Hospital for Sick Children because of a previous exclusion from school. These 41 children form the subjects of this study.

All 41 children were known to the Educational Child Guidance Centre; 39 had also been referred to the hospital department, but only 35 attended for interview and the records of one child could not be traced.

The records of both clinics were scrutinised. Information was systematically extracted about each child and his family. All symptoms recorded anywhere were listed and categorised by two psychiatrists independently (J.M.H. and S.W.) in terms of "neurotic", "conduct" and "mixed" behaviour disorders. Agreement was complete except in three cases who were classified as "mixed" by one psychiatrist and as "conduct" disorder by the other. Using Rutter's classification (Rutter, 1965), a diagnosis based on the psychiatric case histories was also made, again by two psychiatrists, one of whom knew the majority of the children. Agreement, based on independent classification, was reached in only half the cases. The final diagnostic categories assigned were arrived at after discussion.

In October 1970, that is between one and three years following their exclusion, all children still at school were traced to find out in what type of setting they were then being educated.

RESULTS

The size of the problem in primary and secondary schools

Thirty-one children were excluded from school in two years. During the sessions studied the average number of children in Edinburgh Corporation Schools was 67,500 (to the nearest hundred). The problem is thus numerically very small. Of the whole group of 41 children, 16 were excluded from primary schools out of a total average population of 43,800; 25 were excluded from secondary schools out of a total average population of 20,600. Exclusions were thus about three times as common in children of secondary as in those of primary school age.

Age and sex

The mean age of the children at the time of exclusion was 12.0 years; range 5-15 years (Fig. 1). Of the 41 children, 34 were boys and seven girls.

There is a suggestion that the numbers of exclusions of boys rise in the years before transfer to secondary school and, of boys and girls, in the year prior to leaving school.

Type of school

Of the primary school children, 6 were at a day school and 1 at a residential school for maladjusted children, 5 attended a day school for the mentally handicapped, and 1 a school for the physically handicapped. (In Edinburgh there are at present no day schools for maladjusted children of secondary school age, and until 1971 the only secondary residential school for the maladjusted catered only for children of above average intelligence.)

In all, 13 of the 41 children excluded from school were already attending some type of special school, out of a total special school population averaging 858 for the

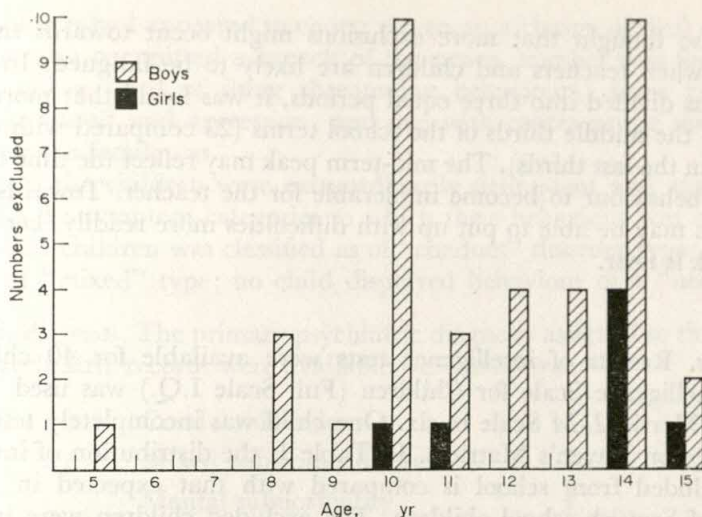


FIG. 1. Distribution of age for boys and girls at exclusion from school.

relevant school years. This is more than thirty times the proportion of children excluded from ordinary schools.

Sex ratio

Among the 41 children, 34 were boys and seven were girls. This excess of boys far exceeds the usual excess of three boys to two girls among child psychiatric clinic attenders (Rutter, 1966).

The exclusion

The child's contribution. An act of aggressive or disruptive behaviour on the part of the child always precipitated the exclusion. The child's behaviour was often dangerous. In every case it was the culmination of a series of incidents. Frequently teachers gave multiple reasons for deciding that the child could no longer be tolerated in school. Eleven children had physically attacked another child (the attack was usually described as "vicious"); one child threw a lighted firework into the classroom; another threw a glass tumbler across the room; one child, a psychotic boy, was described as "not with you". The rest were described as aggressive, disruptive, unco-operative and subject to intolerable outbursts of temper. Although many children also stole, thefts did not precipitate exclusion.

Other factors. It was thought possible that children might be more difficult at school during the winter months when the short evenings curtail outdoor play. The dates of exclusion were known for 40 of the total group of 41 children studied. Fourteen were excluded during the five and a half months of schooling (mid-March to mid-October) when day-light hours are long; 26 during the remaining four and a half months of schooling at times of relative darkness. Thus over twice as many children were excluded during the time of year when opportunities for outdoor play are restricted.

It was also thought that more exclusions might occur towards the end of a school term when teachers and children are likely to be fatigued. In fact, when each term was divided into three equal periods, it was found that more exclusions took place in the middle thirds of the school terms (23 compared with eight in the first, and 13 in the last thirds). The mid-term peak may reflect the time lag involved for a child's behaviour to become intolerable for the teacher. Towards the end of term teachers may be able to put up with difficulties more readily, knowing that a holiday break is near.

The children

Intelligence. Results of intelligence tests were available for 40 children. The Wechsler Intelligence Scale for Children (Full Scale I.Q.) was used in 34 cases, the Terman-Merrill *L-M* Scale in six. One child was incompletely tested but was below average on Raven's Matrices. In Table 1, the distribution of intelligence of children excluded from school is compared with that expected in the general population of Scottish school children. The excluded children were intellectually far inferior to the general population of Scottish school children. Twenty-six excluded children had an intelligence score of less than 90, compared with an expected number of 10.

TABLE 1. DISTRIBUTION OF INTELLIGENCE IN EXCLUDED CHILDREN COMPARED WITH THAT EXPECTED IN THE GENERAL POPULATION OF SCOTTISH SCHOOL CHILDREN

I.Q.	< 70	70-89	90-109	110+
No. of excluded children*	6	20	13	1
Expected no. of Scottish school	0.88	9.12	20	10

* Unknown in one case.

Educational attainments. Attainment test results were available for 38 children (one child was too young to be tested; two were incompletely assessed). Using as an arbitrary index of backwardness in reading a reading age of two and a half years below the child's chronological age, 25 of the 38 children were backward readers. In addition five children were backward in reading by between two and two and a half years, and only six children had a reading age equivalent to their chronological age.

Behaviour. Between them the children had a recorded repertoire of 39 symptoms. Thirty-four children had five or more symptoms. Aggressive, and anti-social symptoms predominated. Thirty-eight children were described as aggressive, 21 had temper tantrums, 19 stole, 17 were disobedient, 15 a distracting influence in the classroom, 14 attention-seeking in the classroom, 13 wandered, 12 were restless, 12 were described as "abusive", 11 truanted and 11 could not get on with other children. Two children had taken overdoses.

Fifteen children had appeared in court; eleven on a charge of theft or shoplifting (one of these also committed a breach of the peace, another was found guilty of vandalism, and a third of using threatening behaviour); three children were charged with assault and aggression; and one with contravening the road traffic act by driving the family car.

As a group the children were extraordinarily delinquent and aggressive. This is reflected in the symptom categories to which their behaviour was assigned. The behaviour of 33 children was classified as of "conduct" disorder type; that of eight children as of "mixed" type; no child displayed behaviour of a "neurotic" type.

Psychiatric diagnosis. The primary psychiatric diagnosis assigned to the 34 children for whom psychiatric records were available were as follows:

Conduct disorder	17
Mixed behaviour disorder	7
Mental subnormality	4
Hyperkinetic syndrome	3
Depressive illness	2
Childhood psychosis	1

The following criteria for possible cerebral dysfunction were used: a definite history of obstetric damage or severe prematurity (under 4½ lb); a history of convulsions; an abnormal E.E.G.; abnormal neurological signs; a clinical diagnosis of hyperkinetic syndrome. By these criteria, eight of the 34 children for whom hospital records were available had evidence of possible cerebral dysfunction and three were diagnosed as hyperkinetic compared with 3 out of 103 primary school children attending the same child psychiatric department (Wolff, 1967).

Physical health. In the absence of a control population it was not possible to determine the relative state of physical health of the children. Neurological disease contributed to the psychiatric disorder of four children (one had had a cerebral abscess in the second year of life; one had had a serious head injury; one child was epileptic; and one had a mild spastic paraplegia). Twelve children had been in hospital more than once; one boy had a late circumcision; one an operation for undescended testicles. Four children had minor physical handicaps (two had defective vision; one a mild speech defect; one had eczema). On the whole however, the children seemed in good physical health at the time of examination.

The social background

The occupation of the father was known in 37 cases and was classified according to the Registrar General's Classification of Occupations (1966). Table 2 shows the distribution of the social class of the fathers of excluded children compared with that of economically active men in the Edinburgh City Census (1966). Only one child had a father of social class II and this man's second job fell into category III. There was a marked excess of families in social classes IV and V.

TABLE 2. SOCIAL CLASS DISTRIBUTION OF FATHERS OF EXCLUDED CHILDREN COMPARED WITH ECONOMICALLY ACTIVE MEN IN EDINBURGH, 1966

Social class	I + II	III	IV + V
No. of fathers of excluded children*	1	20	16
Expected no. of economically active men in Edinburgh	7.8	20	9.2

* Unknown in four cases.

The families

Family disruption. The family composition was known in 37 cases. In only 22 of these were the children actually living with both natural parents. These 22 children included two pairs of siblings, so that only 20 out of 35 families were in fact complete. One child had been adopted. Among the 20 complete families, parental discord was noted in 16. In addition one father spent much time at sea. Out of 37 children, therefore, only 5 lived consistently at home with both natural parents who were in accord.

Parental ill health and delinquency. Three parents were seriously ill physically; one father had had several abdominal operations and a coronary thrombosis; one father was dying of a carcinoma of the throat; one mother had lost both legs and the use of one arm as a result of vascular disease. Three other parents were mildly disabled by physical illhealth.

More striking was the frequency of psychiatric disorder, especially sociopathy, among the parents. In the 34 psychiatric records three mothers were described as having a current depressive illness; five mothers as being "intellectually dull"; and 22 (10 mothers and 12 fathers) as having a personality disorder. In addition, 2 mothers and 4 fathers had drinking problems; 1 step-father had committed murder and 1 theft. Only 7 of the 34 children seen in the hospital department had parents without psychiatric disability or evidence of personality disorder.

Six fathers of the total group of 41 children were known to have been in prison (for murder, assault, stealing and drunkenness); one mother had been imprisoned for child neglect.

Delinquency among siblings. Three children had brothers in Approved Schools or a Detention Centre.

Follow-up

By October, 1970, 16 children had either left school or the district and were not traced. Of the remaining 25 children, seven were in Approved Schools; 6 in residential schools for the maladjusted; 4 in psychiatric or mental deficiency hospitals; 2 in children's homes and attending an ordinary school; 2 in day schools for mentally handicapped children but living at home; and only 4 children were both living at home and attending ordinary schools.

Thus, of the 25 children still at school one to three years after exclusion, only four were both living at home and attending ordinary schools. None of the children were however, at the time of follow-up, giving rise to any particular management problems in the setting in which they found themselves.

DISCUSSION

Little attention has so far been given to the numerically very small, but for educators and psychiatrists extremely difficult, group of children who each year are excluded from school. The problem is greater in boys than girls, and in older than in younger children. There are hints that opportunities for outdoor play may reduce classroom difficulties, and that teachers' tolerance for children's disruptive and aggressive behaviour is lowest at mid-term. The present study however, shows conclusively that children excluded from school are severely disturbed psychiatrically and have serious educational handicaps. Exclusion from school is not an arbitrary act on the part of a teacher and headmaster. It results from the inability of socially deprived, dull children, usually boys, and often from disrupted families with sociopathic parents, to meet the demands of school life.

Although a third of the children were already attending small classes in special schools, this had not succeeded in preventing exclusion: on the contrary, proportionally more children were excluded from special than from ordinary schools. It must be pointed out that in Edinburgh, day schools for the maladjusted and the mentally handicapped have only female teaching staff, and that aggressive behaviour of big boys in these schools is difficult to channel and control.

The children studied were extraordinarily aggressive and delinquent and in eight minimal cerebral dysfunction probably contributed to both their intellectual deficits and behaviour disorders.

Not only were the children intellectually dull and seriously backward educationally, they also came from family environments characterised by low socio-economic status. Moreover, the occurrence of family disruption, marital discord, personality disorder and delinquency among parents was very high. Forty-one per cent of children were not living with both their own parents, compared with 28 per cent of consecutive primary school children referred to and seen at the same department with behaviour disorders, and 29.1 per cent in Rutter's (1966) somewhat older disturbed children. In the 32 families of the 34 hospital attenders twelve mothers (37.5 per cent) and eighteen fathers (56 per cent) in all showed evidence of personality disorder, compared with 41 per cent of mothers and 29 per cent of fathers of primary school children attending the same department with behaviour disorders (Wolff *et al.*, 1968). The excess of personality disordered fathers in this rather older group of children presenting almost exclusively with conduct disorders is particularly striking.

The limited follow-up information available for the 25 children still at school one to three years after their exclusion, indicates that their behaviour disorders in the school setting were by no means transient. While at the time of exclusion only one child was not living at home, at the time of follow-up 21 children were in residential care of some kind. In a more structured environment away from family

stresses, these children were now contained at school. It must be said, however, that to find a residential school, psychiatric in-patient unit or children's home willing to accept these severely disturbed children at very short notice was often difficult. In many cases alternative, sometimes part-time, day schooling had to be arranged as an interim measure.

As a group, these aggressive and educationally backward children excluded from school were characterised by many features of psychiatrically disturbed children known to be of poor prognostic significance. They tended to be poorly endowed intellectually, often had evidence of cerebral dysfunction, came from socially deprived backgrounds and frequently disrupted homes in which marital discord and parental sociopathy prevailed. The ultimate outcome in the present group is unknown. It is not surprising that Robins (1966) found over a third of children excluded from school to be sociopathic in adult life.

SUMMARY

(1) Exclusion from school is numerically a small problem. Forty-one children excluded from Edinburgh schools are described. (2) Exclusion from school occurred more often in secondary schools and much more often in boys. While commoner when opportunities for outdoor play are reduced in the winter months and commonest at mid-term, it is by no means the result of an arbitrary decision by a teacher, but the culmination of a series of aggressive acts by a seriously disturbed child who is usually poorly endowed intellectually, backward educationally, socially deprived and with a family background characterised by disruption, marital disharmony, and sociopathy and delinquency on the part of the parents. A high proportion of excluded children were already attending special schools. (3) One to three years later only 4 out of 25 children still at school were living at home and attending ordinary schools; 19 were in psychiatric hospitals, residential schools or children's homes.

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A CASE STUDY OF AN "AUTISTIC-SAVANT": MENTAL FUNCTION IN THE PSYCHOTIC CHILD WITH MARKEDLY DISCREPANT ABILITIES

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INTRODUCTION

CLINICIANS have long been interested in those arresting patients who, while virtually speechless, socially withdrawn, and absorbed with the ritualistic repetition of fragmented behavior, show mental competence in certain areas far beyond their chronological years or their own overall retarded functional levels. In the past these children were conventionally labelled idiot savants—a term which stressed the cognitive abnormalities; more recently some have been absorbed into the category of childhood psychosis or autism—thereby stressing the behavioral disturbance. While not all autistic children have the highly discrepant mentality of the idiot savant, nor all idiot savants the autistic behavioral constellation, there is growing recognition of a large overlap between the two diagnoses (Anastasi and Levec, 1960; Cain, 1970; Kanner, 1952; Nurcombe and Parker, 1964; Rutter, 1968; Scheerer *et al.*, 1945). In this paper such children will be labelled "autistic-savants" to emphasize the concurrence of their common behavioral and mental traits. The purpose of this study is to analyze mental function—in particular *visual discrimination, memory and associational processes*—in one such case, and to reinterpret similar findings from the literature on the autistic-savant.†

An earlier view that autistic children are potentially of normal intelligence (Kanner and Lesser, 1958) is giving way to the conviction that many, if not most, are subnormal. Recent follow-up studies show that two-thirds are retarded, half have I.Q.s under 50, and intelligence remains low even when behavior markedly improves (Creak, 1963; Havelkova, 1968; Rutter *et al.*, 1968). At the same time some of these children commonly display precocious, obsessional development of reading skills, frequently preceding speech, and advanced musical and memory accomplishments.

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† Unfortunately writings on the autistic and idiot savant do not generally provide sufficient detail to identify whether the cases or groups described are autistic-savants. For this reason, and because we assume a substantial number of similar children in both categories, the term autistic-savant is applied to examples from both literatures. Hopefully, from the general category of childhood psychosis, a subgroup of autistic-savants may be further detailed in the future.

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Psychometric studies on the ability patterns of psychotic children are inconclusive, and the range in clinical types, ages, controls, I.Q. levels, and tests administered makes generalization difficult. Some investigators have found that performance skills are superior to verbal (Bender, 1955; DesLauriers and Carlson, 1969; Gillies, 1965; Rutter, 1965; Wassing, 1965), others the reverse (Anastasi and Levee, 1960; Kanner and Eisenberg, 1955; Nurcombe and Parker, 1964). It is generally agreed that the subjects score higher on memory items (digit span) but lower on language comprehension and vocabulary than on other functions (Roberts, 1945; Rubin and Monaghan, 1965; Rutter, 1966; Scheerer *et al.*, 1945; Tubbs, 1966). Typically they memorize highly specific and isolated material (calendars, road maps, telephone numbers, automobile licenses, piano pieces, etc.).

Four major explanations have been offered for the unusual mental patterns so frequently found in autistic-savant children. (1) The child is exercising special abilities which are either congenital (Rife and Snyder, 1931) or flourish because the rest of the mentality is so deficient as to offer no stimulus competition (Lindsley, 1965). (2) The child has defective perceptual mechanisms characterized by difficulties with consistent integration (Ornitz and Ritvo, 1968), marked preference for proximal over distal receptors (Goldfarb, 1956; Stroh and Buick, 1964), or heightened sensitivity (Bergman and Escalona, 1949). (3) The child withdraws defensively from those stimuli which call for affective responses while elaborating on a static, constricted segment of his inanimate environment (Mahler, 1952). (4) The child is excessively "concrete"; he lacks the "abstract attitude" (Scheerer *et al.*, 1945). His attention is either claimed by the immediate or "... shunted passively from one stimulus to the next", without the exercise of any perceptual control (Goldstein and Scheerer, 1941, p. 3). What looks like excessive sensitivity may really be a deficiency in normal inhibitory processes, a failure to suppress or ignore the irrelevant (Payne *et al.*, 1959; Rimland, 1964).

An alternative thesis, presented here, is that the contradictions and complexities of the data, particularly the mental irregularities, are best understood as the developmental consequence—varying in severity and individual manifestation—of an early insensitivity to somatic stress. This proposition will be discussed more fully in the final section.

CASE DESCRIPTION: HISTORY AND BEHAVIOR

Sam is a classic idiot savant. When first observed in 1968 at the age of 6-8 (6 yrs, 8 mths), he was a moderate calendar calculator, able to give the day of the week for any date from 1963 to 1969 with infrequent errors. At age 7-11 he performed at the ninth grade level on reading and spelling (Wide Range Achievement Test, Jastak *et al.*, 1965). He could name the capital and nearest neighbor of most states and countries and recite the names and dates of presidents, countless addresses, zip codes, telephone numbers, area codes, road maps, magazine publishers, TV schedules, producers and commercials. Yet he spoke only in short phrases and usually under duress. Most of what he said was echolalic, direct or delayed (e.g. departing, he would say, "put your books away now and wave bye-bye"). His comprehension of speech was limited to following a few simple commands. He was not yet able to dress himself, had no interest in his surroundings, was indifferent to others and to

his personal appearance, and took satisfaction only in reading and repeating print of a specialized nature. On a general test of intelligence (Stanford-Binet, Terman and Merrill, 1960) at the age of 5-9, he received a mental age of 2-6 and an I.Q. of 37.

Sam was born in 1961, the third child of a white lower-class family with no history of retardation or mental illness. He was the full-term product of a normal pregnancy and, though awkward and obese, has had no serious illnesses. Both parents are gentle and solicitous toward their children, but also submissive. They willingly allow Sam to follow his obsessions, making no attempt to curtail even the most bizarre behavior; indeed they take pride in (though they have not fostered) his "accomplishments", regarding them as indications of high intelligence.

From infancy Sam displayed mental and behavioral abnormalities. He was so strikingly passive and unresponsive that his parents suspected deafness. Still unable to sit, he spent long time periods separating the pages of books and newspapers. By 1 year, he was absorbed in print to the exclusion of all else. By age 3, though never allowing anyone to read or play with him, he would point to words apparently at random, and wait for a parent to name them. He rapidly learned and repeated the names and sounds of the letters on alphabet blocks.* Not yet 4, and still totally without speech, he was observed by a teacher spelling the months of the year by touching the appropriate letters in sequence. Sam's interest in letters was paralleled by an absorption in numbers, and he mastered them in the same way—by pointing out a number on a calendar, waiting for someone to name it, then returning to silent study. During these early years he showed no interest in toys, imitation or social play, and little growth in independence. Not until 5½ could he manage self-feeding and undressing, though toilet training was largely completed by 3½.

Sam has developed other abnormal traits which are often associated with such cognitive "precocity" in the psychological literature.

Erratic behavior. This is apparent in the developmental history, in the lability of current moods, as well as in mental skills. For example, though Sam sat at 6 months of age, walking was delayed until age 2 when it emerged full blown without a preparatory period of crawling. Word vocalization also occurred suddenly at age 4. He shows extreme shifts of behavior with little emotional modulation or variation. While usually compliant, Sam sometimes becomes agitated, falls to the floor, wails and hits himself—all without any prior build up of irritability. Activity levels show excessive hypo- and hyperactivity and are inappropriate to the setting. Thus, he may lie passively in the backyard or run aimlessly about the examination or school room.

Sensory abnormalities. Under many conditions he is unresponsive to sound and pain stimuli. When preoccupied with a phone book, he blinks not an eye to vigorous clapping behind his head and fails to react to a forceful blow which leaves his arm reddened. He is impervious to hot water, yet even in the heat insists on wearing a jacket out of doors.

Motor abnormalities. Sam's motor achievement lags conspicuously. He still has not mastered jumping, hopping, skipping, cutting, buttoning, snapping, or tying, though not for want of encouragement. Hand and eye dominance are undetermined; recently he has been writing with the right hand while guiding the pencil with his left, forming words backwards as well as forwards, but preserving the correct sequence. Sam's movements are awkward, uneconomical and imprecise: he assumes unstable and seemingly uncomfortable positions, while his preferred posture is to sprawl on the floor; he will reach for near objects with the far hand or climb into a sink to get water; he expresses excitement primitively with whole body reactions. He has peculiar motor habits which include circular walking (usually on his toes), finger-snapping, and hand-waving.

Social abnormalities. Sam is unheeding of other people: he neither initiates contact nor objects to the presence of others, unless they interfere with his obsessive pursuit of print. If intrusion is intensive, he occasionally has a tantrum; more often he passively submits. Never does he direct aggression, supplication, or affection towards others. At most, he seeks protection by sinking symbiotically into an available lap.

Obsessive behavior. Sam is obsessive in his preoccupation with particular forms of print, especially

* Interestingly, Scheerer *et al.* (1945) and Wing (1966) give exactly the same account of their patients' first reaction to a toy.

listings, and in his "insistence on sameness" (Kanner and Eisenberg, 1955). If allowed, he will spend all day with a phone book or encyclopedia. Even sand or blocks are used only for making letters. If a familiar advertisement is changed slightly, Sam becomes distressed and searches frantically for the old "correct" version. Modification of schedules or set patterns (TV shows, traffic routes, food preferences, coming to the hospital on Friday) evokes a display of temper. Parents complain that he cannot be instructed in new ways of doing things and that incidental occurrences easily turn into ritualistic demands. Deprived of his fixations or interrupted in his pursuit of objectives, Sam becomes aimless and agitated. He wanders restlessly on his toes, hands flapping, neither observing nor participating in the surrounding activities while he monotonously intones TV ads or zip codes, as though reciting the print no longer available.

Such behavior can only be understood in the context of Sam's unusual cognitive processes. We therefore turn now to the irregularities in Sam's mental profile.

MENTAL FUNCTION

Visual discrimination and identification. The literature on autistic-savant children suggests that while they may have defects in spatial perception (Eveloff, 1960; Goldfarb and Mintz, 1961; Norman, 1954; Scheerer *et al.*, 1945), and in the organization of visual details into wholes (Norman, 1954; Wing, 1966), perceptual discrimination is generally adequate. Considering their overall low test scores, they do relatively well on form boards (Kanner and Lesser, 1958; Ritvo and Provence, 1953), on matching tests such as the Leiter (Arthur, 1952) in the early years (DesLauriers and Carlson, 1969), and on puzzles, such as Object Assembly (from the Wechsler Intelligence Scale for Children or WISC, Wechsler, 1949; Gillies, 1965; Wassing, 1965). Our material suggests that Sam, too, does rather well on tasks of visual discrimination and organization, but has poor spatial perception.

At the age of 6-6, Sam's Leiter I.Q. was 86, 49 points higher than his Stanford-Binet score at age 5-9. On the Raven Progressive Matrices (Raven, 1947) and Object Assembly tests, which rely heavily on the ability to match visual details, he performed at age level. That Sam can recite all the dates for a particular day of the month (thus counting by 7's when he cannot count by 6's or 8's), can name the geographical points surrounding a given state and can draw street maps also indicate good figural perception.

Whenever possible, Sam will sort by print as in this matching experiment: Two series of identical animal picture cards were presented; on each card appeared in small print and randomized order the name of a different animal from the series. Asked to join those which were the same, he paired them on the basis of the printed word, thus mismatching the pictures, although with the print removed he had no difficulty matching by animal likeness.

Poor spatial judgement is illustrated by the fact that after 27 visits, Sam still cannot find his way through the hospital corridors to the appropriate office, is unable to judge distances, and will repeatedly stretch his arm for an object suspended far out of reach; he cannot remove a key from a ring even after the aperture has been widened; he fails to back away from the trajectory of a moving punch bag while seemingly surprised when hit; and he does not grasp simple detour problems.

Memory. Prodigious displays of memory are constantly mentioned in the clinical reports on the autistic-savant; this, indeed, is his hallmark. Surprisingly, however, most of the experimental and psychometric evidence indicates that immediate recall, while superior to other intellectual functions, is not above age expectancy (Anastasi and Levee, 1960; Roberts, 1945; Rubin and Monaghan, 1965; Rutter, 1966; Scheerer *et al.*, 1945). Random word sequences are memorized as easily as

meaningful ones (Hermelin, 1967; Hermelin and O'Connor, 1967) and single word items (words or digits) rather better than composites (sentences or visual designs) (Anastasi and Levee, 1960; Scheerer *et al.*, 1945; Roberts, 1945). What stands out remarkably in these children is long-term memory—a capacity which may be due to a failure “. . . in the swift metabolism of short-term memory” (Bruner, 1968, p. viii), in short, a failure to forget. Memory deficiencies are not generally noted in the literature, although Scheerer *et al.* do report that *L.*, an idiot savant, after learning certain skills (lighting a match, blowing out a candle) lost them by the time he was retested a year later.

Sam well exemplifies these generalizations. While it is his store of isolated data which makes him an idiot savant, enabling him to perform feats beyond the abilities of most children, his immediate recall is unexceptional, though better for single items than for composites. By contrast, there is an amazing inability to recall simple motor sequences.

Memory for digits was at age level (Illinois Test of Psycholinguistic Abilities or ITPA, Kirk *et al.*, 1968) whereas memory for sentences (Wechsler Preschool and Primary Test or WPPSI, Wechsler, 1967) was at the 4–3 level when Sam was 7–2 and at the 5–3 level when Sam was 8–3. Given groups of 4 phone numbers at various times, Sam would memorize 1 or 2 (as would the examiner's assistant), but 2 years later, long after the memory was lost to the adult, Sam could still reproduce them.

By contrast, he regularly confuses everyday event sequences. When leaving the bathroom, he may pull down a towel before washing his hands or pour leftover water into a wastebasket while throwing his cup into the sink. He cannot recall how to thread paper into a typewriter after numerous demonstrations and usages; he forgets to turn on the typewriter motor and, even after being told, searches randomly over the keyboard for the switch marked “on”.

Learning experiments reveal the same memory failure. Having been taught how to work a number of locks, Sam, age 8, performed markedly less well on a lockboard than did 19 children from a nursery school. The average time on the first presentation for opening and closing a series of locks in a group of bright 4-year-olds was 3 min 33 sec; Sam's timing on a second presentation was 7 min 23 sec (placing him more than 5 standard deviations below the nursery school mean). Given a simple position discrimination task (box on the left always contained the candy) Sam would laboriously reach criteria after anywhere from 17 to 62 trials but would immediately lose his learned response if there was the slightest interruption, e.g. dropping the candy or a telephone buzz. Yet this same child at the age of 6 went to bed having counted to 134, then started anew the next morning with 135, counting to 2000.

Association processes. In addition to memory and visual discrimination, reading also demands association skills; otherwise there would be no link between letter and sound or between word and object. Some writers say that a defect in association is the primary source of symptomatology in the autistic-savant (Rimland, 1964; Scheerer *et al.*, 1945), and is intimately connected with their “concreteness”. Such children, it is held, suffer from a paucity of associations, from inadequate generalization and, most essentially, from “. . . an inability to associate stimuli in the foreground of consciousness with all but a limited fragment of the content of memory instilled by previous experience” (Rimland, 1964, p. 119). According to this theory, associations are largely limited to the serial chaining of stimulus-response bonds which become automatically triggered.

A study of Sam's associational processes, seen through his language, suggests that an automatic chaining theory, like the “concrete” vs. “abstract” explanation of which it is a part, has a core of validity. Sam operates best on a simple stimulus

response level, doing rather well on tests where he is required to identify a single word with a single picture and more poorly where comprehension of syntax is required. Even at a simple *S-R* level, word linkages are formed on several principles including *sound similarity* (hero defined with "zero", chisel with "cheese", funnel with "tunnel"); *temporal word contiguity* [asked to point to the trunk (luggage), he responded "elephant", to reel (fishing) "movie", to capsule (medicinal), "news capsule"]; *emotional similarity* (when under stress, he might say "mama ain't home", presumably a phrase heard under conditions of forced separation); *content similarity* (beer and wine identified as "beverages", cat and mouse as "animals"). Sam also functions at levels of generalization and abstraction so that a simple chaining theory is not completely adequate. His capacity for more abstract associations was elicited by the Scheerer analogy test (Scheerer *et al.*, 1945) and a supplementary test devised by the author which changed the first part of the analogy but left the original third word, thus indicating how much attention he was given to the relationships involved.

On the American School Achievement Test (Pratt *et al.*, 1955), at age 7-4, Sam had an errorless performance on word recognition and meaning (8-4 age level), faultlessly identifying the single printed word with its pictorial counterpart. Given a similar task on the Gates-MacGinite Reading Test (Gates and MacGinite, 1964), Sam scored at the 3-2 grade level when he was 7-9, again with no ceiling.* However, he could not point out which of four pictures illustrated "the bird with a worm" or "the cat sitting on the table", but associated only to single words (pointed to the picture of an isolated bird or cat). On the Auditory Reception subtest of the ITPA, which measures a child's grasp of simple sentences, Sam, age 8-5 and 9-5, performed respectively at the 3-6 and 4-1 year levels.

Although Sam did poorly on the Scheerer test, his answers varied enormously from one administration to the next, and the only 2 responses which were consistent were also correct (light-day, dark-"night", barn-hay, library-"books"). The progression of responses on 2 items illustrate an effort to approximate relationships. Given man-husband, woman- , Sam replied "boy" the first time, then "brother", then "wife". Given father-son, mother- , Sam replied "brother" twice and then "daughter". Of 17 supplementary analogies, Sam appropriately changed answers 5 times. Thus, when barn-hay, library- became drive-in-eat, library- , Sam switched his answer from "book" to "read"; when father-son, mother- became girl-young, mother- , Sam shifted from "daughter" to "old"; when husband-man, woman- became man-big, woman- , Sam shifted from "wife" to "little". However, when man-husband, woman- became man-strong, woman- , Sam faltered and said "fast". As there is a relationship between strong and fast, the shift of response suggests a sensitivity toward meaning.

There is considerable clinical evidence that Sam can induce and generalize rules. Given an unfamiliar classified telephone directory and unknown words, he muttered to himself the correct category as he systematically searched out the number. Thus told to look up the Viennese Cake Box, he whispered "bakery"; for Muriel's Hair Stylist, he searched under "beauty salon". Given difficult words to spell, Sam makes errors which show his systematic use of phonetics and English irregularities. When tired of performing, he will frequently spell out only an initial syllable, commenting, "abbreviation". Furthermore, he reads numbers up to five digits, transforms phone numbers with letter prefixes into seven digits, alphabetizes and does coding problems. These accomplishments demonstrate the "abstraction of common properties", one of Goldstein and Scheerer's (1941) criteria for the abstract attitude.

* Tests were administered in printed as well as oral form with no important differences in results. Although under both conditions Sam's success illustrates simple *S-R* conditioning, the fact that he can associate both the oral and printed stimuli with a picture, and the picture with the "real" object, already begins to show a multiplicity of connections which cross several sensory fields. Given a phrase, Sam can often spell it, read it, perform an action, or recognize the pictorial form.

Having surveyed Sam's strengths, it remains to point out two areas where he shows striking associational failures. First, he cannot identify words which describe emotional and physical states (happy, sad, angry, tired), comparative words (shortest, tallest, lighter, heavier), and words or phrases which require generalization from personal experience rather than arbitrary rules (e.g. recognition of a child about to fall down or about to miss catching a ball; a hot day).

To examine this defect, a pictorial quiz, labelled the Empathy Test, was devised on the model of the Peabody Picture Vocabulary Test (Dunn, 1959) (one picture right in a choice of four). The same test, along with the Peabody, was given to 37 bright nursery school children (mean Peabody I.Q. 115) who were divided by age into two groups: average chronological age of the younger group was 3-5 with a mean Peabody mental age of 4-7; average chronological age of the older group was 5-8 with a mean Peabody mental age of 6-5. Our test correlated well with the Peabody mental ages (for the two groups combined the Spearman Rank Correlation Coefficient was 0.64, significant at 0.001 level). Out of our 36 Empathy questions, the mean score of the younger group was 22 (standard deviation of 5.9), for the older group 31 (standard deviation of 4.8). Sam scored at less than chance. Thus, children scoring slightly less than Sam on the Peabody (mental age 6-5 years vs. 6-8 years) were successful with 86 per cent of these new words, while those several mental years behind him answered 61 per cent correctly.

The other type of associational failure lies in what might loosely be called cause-effect and means-end relationships. Sam learns sequences of acts as separate entities, just as he masters sentences, but cannot use old solutions for new problems; he lacks a notion of causality, an awareness of general precipitating events.

Sam does not, for example, search for switches on electrical appliances, although he has learned to operate several individual ones. He does not see latches as restrictions even after opening doors on lock boards. Given a suitcase, he merely pulls at the crease where the top and bottom join. He seems not to understand that objects once activated can move on their own momentum. Given friction and wind-up toys or a ball, Sam moves them manually but does not, even after demonstration, release them. When he wants to bowl, he pushes the ball-in-hand against the pins, though he has often seen his parents at this sport. He is unable to solve the type of problem handled so ably by Kohler's apes: If a phone book is placed on a counter above his reach, Sam fails to use a chair as leverage for securing his book. If the book is then placed on a new ledge in a different room, even after being successfully instructed on the original problem, Sam simply looks up at it hopelessly, jumps, tries to scale the vertical cabinet and plaintively whines for his directory. In like fashion, if a candy is placed in a narrow corridor with a stick close by, Sam fails to use the stick as a tool until told to do so, after which he has no further trouble.

DISCUSSION

The preceding review of mental function in this autistic-savant reveals a peculiar pattern of abilities and failings not untypical of others in this category. He has good plane, but poor spatial discrimination. He has excellent long term recall and fascination for material which is repetitive, static, discrete, visual and independent of context (dictionaries, phone books, almanacs are preferred, as are words over sentences). But he has difficulty recollecting motor sequences and his initial rate of memory acquisition is unexceptional. While he most readily forms simple associations to isolated material (single words, pictures, digits), he shows relatively

advanced skills in processing analogies and in categorizing. Yet he fails to identify subjective words which are easy for children half his chronological age, cannot deal with syntax, and has no grasp of practical cause-effect relationships.

Of the four theories mentioned in the introduction, those which postulate special endowment, distorted perceptual mechanisms, or defensive specialization are hard put to explain these discrepancies. The "concreteness" hypothesis is rather more successful: it holds that individuals who are poor at abstracting do little to organize, distort, or otherwise transform their perceptions and therefore leave them intact for later recall. But even this theory fails to explain the restriction and specialization of mental content. Why the intense interest in numbers, dictionaries, directories, almanacs, encyclopedias, etc. all of which are "abstract" in that they are symbols, not things, and are not a dominant part of the everyday stimulus situation? Why the remarkably precocious focus and early attainment of reading skills and the impressive failure to learn simple motor sequences which seemingly fulfill the concreteness criterion? Rather than being attracted to the dominant foreground stimulus, Sam seems offended by it. He persistently disregards all toys or large objects and with great determination searches out recesses of print to the point of peeling apart cardboard boxes to find serial numbers on them.

The hypothesis of this article is that the abnormal mental development stems, at least in part, from a deficient motivational system which in turn may derive from an early disturbance of bodily awareness or "inner status" (Arieti, 1970)—the recognition of such sensations as pain, temperature changes, hunger, thirst, and fatigue. Empirical verification and refinement of this thesis requires measurements of subjective physiological states not currently available and thorough prospective studies which to date have revealed few positives (Fish, 1971). However, there is supportive data in developmental theory and case histories.

Modern authorities are in general agreement that the earliest demands of the normal infant spring from his effort to preserve states of bodily comfort and end discomfort. Objects are understood solipsistically in terms of their gratification potential (Werner's physiognomic perception, 1940). Without these hedonistic drives, we hypothesize, motivation is stalled; there is no seeking of pleasure, no avoidance of pain, no exploration. Furthermore, the child lacks a primary clue for interpreting external stimuli. Bottle and breast are not known by the satisfactions they promise, the feelings they generate, but merely by the external senses of sight, sound, smell or taste.

If the autistic-savant has an early motivation lacuna stemming from his inability to recognize and process somatic sensations, two major consequences follow. First, the child becomes passive, neither acting upon nor reacting to events. Hence he cannot properly grasp reality, for, as Piaget (1954) has observed, objects are normally first perceived as extensions of the self, becoming independent only as one acts upon them. Second, because events are not experienced in terms of needs and satisfactions, cognitive development is limited to merely deciphering aspects of the outside world. In Piaget's terms, the autistic-savant accommodates without assimilating. He learns over time to recognize, decipher, and organize certain stimuli, but he cannot incorporate, sift and readjust information in accordance with an

established corpus of subjective mental schemata. Out of such a depersonalized world only a pseudo-objectivity results.

Sam's early development and his current behavior give evidence of both the decreased consciousness of inner status and subsequent passivity. His apparent insensitivity to hunger, his unresponsiveness to temperature changes and to pain stimulation, the awkward, unmodulated motor habits, unusual pacing of motor accomplishments and the lack of left-right dominance (a detail reported with amazing frequency in the literature on this type of child) are suggestive of a child estranged from the body's natural rhythms. Sam's early years were spent gazing, rather than exploiting; receiving, rather than searching.

Let us now see, more specifically, how these original deficits in subjectivity and initiative explain the observed irregularities in mental function. In a child whose somatic awareness does not provide the initial catalyst for mental development, one would still expect some expansion in the visual and aural modalities. Arieti notes that "the experience of inner status is very important in the perception of pain, hunger, thirst, temperature"—just the areas where Sam is weak—"and less important in other perceptions such as touch, taste, smell. In auditory and visual perceptions, the experience of a change of inner status plays a minimal role" (Arieti, 1970, p. 7). On the basis of this defect, one would additionally expect a stunting of spatial orientation, a faculty which emerges only when a child, aware of his own movements, can internally represent his displacement relative to those of other bodies. These passive or randomly active children understand neither the implications of their own movements nor those of other moving objects.

In normal development, a child understands causality only after he repeatedly senses his own efficacy in making things happen. The autistic-savant, lacking this experience, learns action sequences, not by reference to the ends they serve, but as arbitrary combinations. Means and ends are not separated, generalized, or used flexibly when confronted with novelty, because the instrumentality of an act is not understood apart from the specific circumstances in which it is first learned. Unable to grasp purpose or function, the child over-relies on his memory of associations and, when memory fails him, he gets the sequence wrong (the paper towel pulled down before the hands are washed). Arbitrary associations (digits), or even logical ones (categorization), dependent on memory not intention, are not impeded. Inability to see the functional equivalence of different actions also causes behavioral rigidity, the "insistence on sameness". Sam, having been taught to urinate sitting, refuses to do it standing because he does not see that the same result can be achieved by either means.

Since the autistic-savant lacks, by hypothesis, a persistent sense of inner status, the precondition for a stable self-image, he must look externally for familiarity, continuity and organization. Environmental details, therefore, acquire exaggerated importance. This helps explain the specialized interests and extraordinary memory. Print, for example, serves as a suitable anchor on which to hang one's need for coherence because it is repetitive, static, discrete, isolated and, as pure symbol, completely independent of personal associations. Inside the world of print, the ease with which Sam learns particular symbols, and the interest he takes in them, seem proportional to their objectivity and arbitrariness, their remoteness from experience:

numbers, addresses, dates, names, places, at one extreme, relational and emotive words (as in our empathy test) at the other. If Sam finds in isolated, self-contained systems that needed thread of continuity, stability and permanence, then memory for this material would naturally be increased. Long term memory is further enhanced because it remains untarnished by the usual elaborations and condensations; being normally "... an affair of construction rather than one of mere reproduction" (Bartlett, 1932, p. 205).

The specialized abilities and obsessional interests of the "autistic-savant" represent the only small segment of reality to which such children can attach themselves. These activities help fill the intellectual and personal void born of impoverished drives. The mental processes and peculiar skills, according to this interpretation, express the heightened development of intact receptivities and are a natural cognitive outcome of the failure adequately to recognize somatic sensations.

SUMMARY

This paper describes discrepant mental function in an autistic-savant boy, so labelled because he has the behavior of an autistic child and the cognitive profile of the idiot savant. Major findings are that: perception is adequate for visual discrimination, but not for spatial orientation; superior memory exists for specialized data of limited scope and is explained, not by unusual rates of initial learning, but by a failure to forget; abstract associations are formed while developmentally easier tasks are failed. It is suggested that these contradictions—frequently found in psychotic children—are a natural developmental outcome of deficiencies in somatic awareness.

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CHILDHOOD HALLUCINATIONS

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INTRODUCTION

THE SUBJECT of childhood hallucinations requires clarification. Whilst studies in adults can provide the basic framework the application to children needs careful qualification. In addition to the physical and psychological immaturity of the processes involved there are limitations of communication and some differences of clinical settings.

This paper aims to: (a) Review concepts in adults in relation to childhood phenomena.

(b) Present the findings of childhood hallucinations in clear consciousness in a child psychiatric population.

(c) Provide a descriptive account of examples of important types of childhood hallucinations occurring in clear consciousness.

DEFINITIONS

An hallucination is defined by Jaspers (1962) as *a false perception which is not a sensory distortion or misinterpretation but occurs at the same time as real perceptions*. Kanner (1957) described hallucinations as *sensory impression without external stimulation* and Weiner (1961) defines them as *a perception of non-apparent, possibly non-existent internal or external stimuli*. Using such definitions does not lead to a clear distinction between hallucinations, pseudo-hallucinations and vivid imagery which is particularly important in children. Sedman (1966, a, b) and Jaspers (1962) have clarified this area in adults. Jaspers emphasised that perceptions are located in "external objective space" having concrete reality, objectivity and are defined in a clear and detailed manner with a constancy independent of will. Images, on the other hand, are located in "inner subjective space", are less clearly defined and are not constant, being dependent on recreation by the will. He groups pseudo-hallucinations with imagery and sees them both as varying considerably in terms of detail and consistency. Sedman (1966a) defines hallucinations and pseudo-hallucinations as perceptions through the senses distinguished by the subject as real and not real respectively. He describes visual pseudo-hallucinations as clear detailed, Technicolour, three dimensional projections with a human content of deceased relatives or strangers occasionally associated with auditory experiences of the person's name being called. These were seen and heard by the real eyes and ears in contrast to Jasper's view that they appeared only in the "mind's eye". The content

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was almost invariably psychologically meaningful. The patients' critical judgement led them to recognise that these were not true percepts despite mediation through the sense organs. Sedman claims that subjects easily distinguish imagery and pseudo-hallucinations from true hallucination but had difficulty putting into words the reason for the distinction. The child's problems in this distinction are evident, compounded by other difficulties in verbalisation considered below. It has been questioned however whether an individual can always distinguish the relevant experiences sufficiently clearly. Fish (1967) denies that a clear cut distinction exists but does not give evidence to support this. Segal (1970) produced evidence that young adults in unfamiliar circumstances, with brief unrepeatable sensory input, had difficulty distinguishing between illusion, vivid imagery and hallucination. Sarbin (1967) reminds us of the dangers of being influenced by social and nosological factors in distinguishing fantasy, dream, false impression and hallucination. His critical comments on linguistic influences such as the use of metaphors, the verb "to see" and qualifying clauses such as "I thought" are of equal importance in children.

CHILDHOOD ASPECTS

An account of childhood hallucinations would need to include at least the following information:

- (1) Sensory modality.
- (2) Description-including intermittent or continuous, infrequent or common, ill-defined or clear, simple or complex, fragmented or organised.
- (3) Whether the child can appreciate the pathological nature of the hallucinations.
- (4) Occurrence of imagery and pseudo-hallucinations.
- (5) State of consciousness—clear, altered or variable.
- (6) Associated disease—functional or organic.
- (7) Psychological meaningfulness and interpretation. Whilst this is important, it is considered outside the bounds of the present study.

(a) The main problem is the *distinction of pathological conditions from the normal phenomena* associated with the immature individual and was explored in the early studies of Despert (1948). Horowitz (1970) has made a major contribution to the general understanding of imagery in adults and this is of relevance to children. Hallucinations in children may not be clearly distinguished (or even the possibility of their existence be raised) because of cognitive, emotional, social and learning influences. At an early age the child has private meanings without reference to the outside world (Piaget, 1952) and is limited in knowledge of what is possible in the real world (Eisenberg, 1962). Their descriptive ability is limited and in discussion of experiences the child may use words such as "see" in a number of the 29 possible meanings given in the Oxford English Dictionary. Variability in attention and memory, particular for less vivid experiences, is liable to produce even more false negatives in children than Horowitz found in adults. Anxiety may lead to a child being most reluctant to discuss or even reveal frightening experiences (as illustrated by the usual behaviour following nightmares), and imagery of particular personal

significances, for example under stress or deprivation, may be deliberately concealed by the child. The opportunities the child has had in developing skills in translating experiences into words may be a further limiting factor (Eisenberg, 1962). Finally, Horowitz (1970) lists a number of changes in current mental state which can affect subjective experience and communication and these are even more important in children viz. change in consciousness, attention, affect, attitude towards others, appraisal of situation, expectation, plans, wishes to comply or resist.

In children, especially those suffering from psychosis, rigorous criteria need to be applied before accepting pieces of behaviour as being representative of hallucinations. This has already been discussed elsewhere (Kolvin *et al.*, 1971). It is not sufficient for the children to be observed gazing round in a distracted manner or "looking as if he is hearing voices". At some time the child should describe the hallucinatory experience. This is special importance in infantile psychotic (autistic) children who frequently can be mistakenly thought to be attending to hallucinatory phenomena. These remarks are meant to highlight the problems of assessment in studying hallucinations in childhood rather than provide a comprehensive account of all factors involved.

(b) *Particular "normal" phenomena of childhood*

(i) Imaginary companions are classically reported by Bender and Vogel (1941) where the child can describe a clear image in external objective space and although the child may treat the image as real, he or she is easily convinced they are not. Bender found them to be not pre-psychotic but a beneficial mechanism helping the child through a deficiency in the child's material or, more often, social life. Loneliness was a frequent association. Such companions are common, as are imaginary play objects.

(ii) Eidetic imagery is the ability to produce vivid, almost perfect images of visually presented material which is not confused with reality. Anthony (1959) describes a decreasing incidence with age from 60 per cent at the age of 4 years to 7 per cent in adults and considers it often unrecognised. Haber and Haber (1964) however could only find 12 cases out of 151 children and not all of these were true "eidetikers". This is more in keeping with recent research findings.

(iii) Pseudo-hallucinations are reported by a small number of children under the guise of "visions". Mostly these are described as transient and shadowy. Older children more able to verbalise their experiences often remark that was "some kind of imagination" but are nevertheless frightened and upset by the experience. This affective disturbance and the brief experience lacking in clarity may make differentiation from an illusion difficult. Clinical experience suggests that pseudo-hallucinations occur more frequently in maladjusted rather than normal children, especially those coming from disturbed backgrounds.

(iv) The "night terror" is an uncommon phenomena particularly occurring in younger children. The child is not asleep yet unaware of surroundings or efforts to reassure him. He stares in terror, evidently visually hallucinated. The attack lasts a few minutes to half an hour and there is subsequent amnesia. Anthony (1959) in a study of 66 children referred with severe sleep disturbance found 30 had night terrors, 16 nightmares and 20 were sleepwalkers. Of those with night terrors 18

were aged 4-7, 7 were aged 8-10 and 5 were aged 11-14 years. Anthony points out that the cry of terror in the night may be due to a visual illusion, hypnogogic or hypnopompic hallucination, a nightmare or a night terror.

(v) Hypnogogic hallucinations were found in more than half of a group of students studied by McKellar and Simpson (1954) so that it is not surprising that such phenomena are frequently reported by children. The latter may describe them as dreams or visions. McKellar's students distinguished them from ordinary images by their being involuntary and "autonomous". They were not considered to be dreams because the subject did not participate in them, a distinguishing feature supported by Oswald (1962). Some subjects described real perceptions at the same time which Jaspers (1962) suggests distinguishes them from dreams. These distinguishing features can be sought in children but the accompanying affective disturbances, the altered state of consciousness and the likelihood of rapid forgetting make assessment difficult.

(c) "*Pathological*" hallucinations in children can be classified in two ways.

(i) *Associated state of consciousness* as suggested by Sedman (1966a) namely those with clear and those with altered consciousness. The latter adds yet another barrier between child and therapist.

(ii) *Coincident disease* is used by Weiner (1961) to classify hallucinations into primary and secondary groups. The first include phenomena described in section (b) above to which he adds hallucinations occurring in behaviour disorders. Secondary hallucinations arise in "obvious organic and functional syndromes" including toxic states, brain and systemic infections, drug effects (including withdrawal), epilepsy, organic brain disease, schizophrenia, severe depression and sensory deprivation.

Several studies have emphasised the importance of childhood hallucinations in the absence of a psychotic illness. Eisenberg (1962) reported a third as non-psychotic and Wilking and Paoli (1966) pointed out the association of a poor socio-economic background in their own and other series. Bender (1970) gives panic states in 3 to 6-year-olds and deprivation and immaturity in mid-childhood as the causes of non-psychotic hallucinations. Care must be taken to distinguish these from the excessive fantasy which may occur in children under stress. Wilking and Paoli (1966) summarise the clinical distinguishing features of non-schizophrenia hallucinations as being reality orientated, and adaptive whereas schizophrenic hallucinations were bizarre, fragmented, often with bodily hallucinations and paranoid delusions.

A potentially grave significance of hallucinations in adolescence was reported by Winn (1969) who found that out of 40 hallucinated 11- to 15-year-olds, 25 had hallucinations telling them to kill themselves and a further 5 threatened to do so in response to hallucinatory instructions to be aggressive. Three quarters suffered from a psychosis. The extremely disturbed backgrounds often with strong cultural beliefs in the supernatural may partially account for this finding.

Organic syndromes with hallucinations do not commonly find their way to psychiatrists. One would expect that the combinations of frequent febrile illnesses and the child's immature central nervous system would frequently produce delirious

states with hallucinations. This was not borne out, however, in a paediatric unit where only two children with hallucinations were seen out of 598 admissions (Morgan, 1972). One suffered from pneumonia and the other hyoscine intoxication.

PRESENT STUDY

Hallucinations in children in clear consciousness are reported in three groups of patients:

(a) 40 in-patients between the age of 5 and 15 years suffering from all types of psychiatric disorder except psychosomatic disorders. Only 2 of these had true hallucinations, both in clear consciousness, one, a child suffering from late onset psychosis and the other a non-psychotic behaviour disordered child. This gives a frequency of 5 per cent in patients sufficiently ill to merit admission to hospital.

(b) The next group consisted of 33 cases of childhood psychosis of late onset (from ages of 5-15) which have been reported previously. (Kolvin *et al.*, 1971).

TABLE 1. HALLUCINATIONS IN
33 PATIENTS WITH LATE ONSET
PSYCHOSIS

	Number	%
Auditory	27	81
Visual	10	30
Bodily	12	36
Total frequency	27	81

Neither visual nor bodily hallucinations occurred without auditory hallucinations. Fifteen patients complained of the voices they were experiencing, 10 complained of the content of the voices, 12 described them coming from their own body, whilst 16 admitted speaking to their voices. The bodily hallucinations were of a fantastic nature in 9 children. The above statistics merit descriptive qualification. The older the child the more complex the hallucinatory phenomena and at the older ages these gradually approximated to those found in adult schizophrenic patients. As early as the age of 9 and certainly by the age of 10 some of the hallucinations were beginning to be well organized and systematized. In this group the hallucinations always occurred in a state of clear consciousness and tended to be more frequent and continuous but responded rapidly to phenothiazine therapy. It is interesting to note that in only 3 of the 33 cases were there descriptions of a previous imaginary companion.

(c) The final group consisted of 47 cases of infantile psychosis (with an age of onset before 3 years). In these there were no cases with unequivocal hallucinations according to the above criteria. In fact in two of the 47 cases, both of whom had speech, there was a strong suspicion of hallucinations but in neither could an unequivocal account be obtained. In other cases there were lesser degrees of suspicion but often this could not be confirmed because of the lack of speech.

EXAMPLES OF CHILDHOOD HALLUCINATIONS

In this section a descriptive account is given of hallucinatory phenomena experienced in the three clinically important groups of disorders.

(a) *The psychosis of childhood of late onset*

An 11-year-old boy was referred with what appeared to be a depressive illness and in addition he was refusing to attend school. As the depression abated other symptoms began to appear, including incongruity of affect, neologisms, intense preoccupation with germs and repetitive hand washing. Delusions then became very evident—he was convinced that he was on another planet and some other beings had taken the form of his parents and that a whole masquerade was being undertaken to deceive and influence him. He saw his activities as being determined by outside influences, other children could read his thoughts and their eyes passed something into him. He experienced intermittent auditory hallucinations and described a variety of haptic hallucinations, e.g. being able to feel another boy touching him when he could clearly see that he was not.

These features remained patchily persistent for a number of weeks but phenothiazines eventually appeared to control most of the florid symptomatology. Some three years later he is coping reasonably well in a sheltered boarding school situation with phenothiazine cover. This fairly rapid response of the more florid symptoms, especially the hallucinations is a common feature of late onset psychosis.

(b) *The child under stress*

An 11-year-old boy coming from a home with considerable latent tensions related to parental incompatibilities and frequent absences of the mother from home suddenly began to describe people and objects in the room with him, side by side with the other reality perceptions. This included his mother and a boat with a hole in it but these percepts were less clearly defined and elaborate though three-dimensional. These phenomena cleared with in a few days with environmental change and psychological management. Discussion revealed that the child though appreciating the abnormal nature of the phenomena viewed them as real external objects. The hallucinations here were briefer, simpler and less bizarre than those described by children of a comparable age suffering from psychotic states.

(c) *Toxic state*

This recently recognized type of symptomatic hallucination occurs infrequently after the use of Mandrax (a combination of methaqualone and diphenhydramine). Instead of becoming sedated the child was frightened, panicky, describing both auditory and visual hallucinations of a threatening nature. These were changeable with little logical sequence, the auditory hallucinations being brief whilst the visual were more prolonged. The hallucinations were considered to be real and it was impossible to convince the child of their pathological nature. There was no evidence of altered consciousness. The hallucinations rapidly disappeared on stopping the drug.

It is important to note that so far this has only been reported in children with pre-existing maladjustment or neurotic disorder. It may well be that Mandrax facilitates the emergence of hallucinations in a pre-disposed child.

DISCUSSION

Hallucinations in childhood have been studied by a number of authors but more systematic accounts are needed which would provide more definite information about incidence, etiology, phenomenology, and prognosis.

TABLE 2. REPORTED INCIDENCE OF CHILDHOOD HALLUCINATIONS

Author	Population	Incidence of hallucination (%)
Despert (1948)	28 psychotics	"common"
Jaffe (1966)	66/97 psychotics	67
Jaffe (1966)	20/25 psychotics with epilepsy	80
Jacobsen <i>et al.</i> (1966)	14/14 psychotics	100
Portell (1970)	39/66 psychotics	59
Kolvin <i>et al.</i> (1971)	27/33 late onset psychosis	81
Childers (1931)	25/148 schizoid children	16.9
Despert (1948)	4/58 neuroses	7
Bender (1954)	12/81 behaviour disorder	15
Jaffe (1966)	12/28 neuroses	43
Jacobsen <i>et al.</i> (1966)	2/14 behaviour disorder	15
Eisenberg (1962)	14,000 out-patients	0.4
Egdell and Kolvin (1972)	40 in-patients	5

Table 2 illustrates the very varied findings for the incidence of childhood hallucinations. The differing criteria used in both the recognition of hallucination and the diagnosis of the associated disorder account for most of the variations. The figures provided by Jaffe (1966) for his primary behaviour disorders appear disproportionately high in relation to the frequency of hallucinations in other reported series. The next highest frequency in neurotic and behaviour disorders is the 16.9 per cent of Childers (1931) but in our series this fell to 5 per cent. Explanations other than selectivity may account for the discrepancies. Jaffe himself questions the possibility of illusions being mis-diagnosed as hallucinations and the difficulty of distinguishing hallucinations from imagery. In our study, if less rigorous criteria had been used, 3 children with pseudo-hallucinatory phenomena, 2 with longstanding imaginary companions and third with an imaginary companion, vivid day-dreaming, creative fantasizing, and continuous muttering to himself, could easily have been included in the hallucinatory category. This would have brought our frequency figures to 12.5 per cent. If hypnagogic phenomena had been included this would have been very much higher.

In a random selection of 100 male patients Jaffe (1966) found that 77 per cent were psychotic. In direct contrast, in the United Kingdom, only a small proportion of in-patients suffer from late onset psychosis (Kolvin *et al.*, 1971). This suggests that the two series are not really comparable and different criteria are being used to diagnose psychotic conditions in the United Kingdom and the United States. This, however, could not account for the higher incidence found in patients by Jaffe compared with Bender. Finally Jaffe was using case records only, whereas in

the series reported here, all patients were examined personally by one or other of the authors.

The high incidence of hallucinations in childhood psychotic conditions of late onset (i.e. between 5 and 15) and the absence of hallucinations in psychosis of early onset (i.e. before the age of 3 years) is noteworthy. Fish (1962) has claimed that hallucinatory voices in clear consciousness in the absence of demonstratable brain disease is characteristic of schizophrenia and this is especially applicable when the hallucinations are well organized. In these circumstances the complete absence of unequivocal hallucinations in the early onset psychotics, even when they are older and able to speak, is of particular significance and is confirmatory evidence that infantile psychotics do not develop the more florid symptomatology seen in adult schizophrenia.

SUMMARY

The definition and problems in diagnosis of childhood hallucinations is the background of a critical review of reported figures of incidence. Hallucinations, occurring in clear consciousness in a child psychiatric in-patient population are presented. There was a frequency of 5 per cent in the general in-patient group. Eighty-one per cent of those with psychosis of late onset (5-15 years) were hallucinated in contrast to the infantile psychosis group (onset before 3 years) where none were found. Descriptions of children with hallucinations arising in great stress, late onset psychosis and Mandrax intoxication are given.

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A NOTE ON "ALIENATED" YOUTH THE FUNCTIONS OF THE DISTRICT OF SOHO, LONDON

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INTRODUCTION

THE MATERIAL within this note derives from experience as Consultant to a variety of youth projects, mostly in London, concerned with the plight of alienated young people at various stages in their development.

The term "unattached" was coined by Mary Morse (1905) to describe a class of adolescents usually 15 or over, who, though for the most part maintaining a home base, had nevertheless dissociated themselves from their parents and their parental values but had been unable to attach themselves to any other meaningful group or value system. They were freewheeling in the community, neither working nor studying, dissatisfied with themselves and with society, but unable to find any alternative and unable to forge their own identity. Some were completely cut off from their homes and communities, either rejecting them or being rejected by their parents, and some indeed had no homes to go to and were thus homeless and rootless. This group has been studied in depth by a London based project, "The Kensal Centre", Timms (1968).

Unattachment is no new phenomenon, nor is it necessarily an unhealthy one. Throughout history adolescence has been recognized as a turbulent period during which the search for identity becomes a major occupation. The phenomenon of the "drop-out" and the rebel against society is as old as time. So is the recognition of the fact that adolescents need to go through a "moratorium" (to use Erikson's (1968) phrase), a period of retreat during which they may in safety experiment and redefine their own positions with regard to the outside world and to themselves. Many societies deliberately provide such opportunities. In so-called "primitive" cultures a common pattern is that at or around puberty boys (and sometimes girls) are taken away from their families into one-sex communities and taught the skills pertaining to manhood or womanhood. Often this culminates in an initiation ceremony (Kardiner 1945).

In our own English culture remnants of this system can still be found. The "public" boarding school is perhaps the nearest approach to the primitive tribal boys' hut; but the same facility is also offered to our delinquent youth, many approved schools being based on the "public school" model. On a less intensive basis community youth clubs offer the same kind of service, as do also organizations such as Task Force, Community Service Volunteers, and Voluntary Service Overseas. The essential feature of all is that they offer young people a chance to reorientate themselves away from their own families.

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In the absence of such retreats sanctioned by the community, it is left to adolescents to find their own escape routes. The street gang is perhaps the commonest such attempt. Where there is no acceptable youth club, teenagers often congregate in coffee bars, dance halls and public houses.

It is nevertheless instructive to look at the social predicament of adolescents during the post war years and to contrast this with earlier periods. The word "un-attached" is still relatively neutral, but it replaces several which are highly charged emotionally. Too often the word "adolescent" is spoken but the word "delinquent" is heard. It seems likely that the following terms, all of which were used in a pejorative way at various periods in post war times, are basically synonyms for the same phenomenon: "Spiv", "Teddy Boy", "Beatnik", "Unclubbable", "Mod", "Rocker", "Hippy", "Skinhead", "Greaser", "Drop-out".

In earlier times, although the same problem undoubtedly existed for individual adolescents in England who felt alienated from their parents, there were various socially acceptable paths they could follow. They could and did run away to sea, or join the armed services; they might become "Empire Builders" either as ex-convicts or as "remittance men". But whatever path they followed they seldom presented the same mass threat to adult value systems as appears today. There are several possible reasons for this change:

(1) *Adolescent affluence.* In former times adults for the most part held the power and the money. They were in the "boss" position and did not have to take too seriously what was said by their rebellious youngsters. Now all this is changed as a result of the relative wealth of young people and the fact that there is a booming consumer industry focussed specifically on the wants of adolescents.

(2) *The mass communication media.* A large section of television, radio, recording industries, and the press now caters entirely for adolescents, with the result that there is now a powerful teenage "Pop" culture which is international in scope and even penetrates the Iron Curtain. It is impossible for anyone to avoid it as its message is proclaimed stridently and literally from the house tops by every other transistor radio. Ironically this culture, like the adolescent consumer industries, is mainly purveyed by adults (not by adolescents) who are prepared to exploit adolescent trends and to cash in on the profits.

(3) *The fantastic growth of technology during the past 50 years.* One of the results of this growth is that the world into which our children are born is so different from that in which we grew up that we are ill-equipped to guide them. By the time they reach adolescence our social skills are already in many respects obsolete. The problems they face and the questions they ask are ones to which we have no adequate answers. How, for example, can parents who have had no personal experience of drug-taking adequately guide their children when confronted with the dizzy confusing array of seductive shortcuts to happiness which are displayed to them on every side? Faced with their inability to make anything like an adequate response it is hardly surprising that many parents react defensively and sometimes violently.

For all these reasons the usual threat presented by adolescents to the adult community has been greatly intensified. Some degree of threat is inescapable for we adults envy them their freshness, their spontaneity, their youth, their attractiveness and the fact that they are able to ask awkward questions. They are on the

threshold, while we are burdened with all the consequences of our past mistakes. They rearouse in us conflicts which we had thought were decently dead and buried.

When, as in the past, adolescents were not perceived by adults as so much of a threat, all of this was just tolerable. Now, however, the reaction to them is increasingly defensive and liable to categorise and scapegoat all teenagers as "bad and degenerate". In this way the generation gap widens. The need for an adolescent moratorium, a temporary retreat from external pressures is thus doubly important in the twentieth century. (Erikson, 1958, 1959).

SOHO AS A "RETREAT" FOR THE ADOLESCENT

I have suggested that in the absence of community sanctioned facilities adolescents establish their own self-made retreats in which, if they are permitted, they may free wheel for a time. The more enterprising will establish their own organizations. The majority however will make use of whatever commercial facilities are available. The necessary conditions for such a retreat are as follows:

(a) There is no obligation to make close personal relationships at a time when they are not ready for them, but there are nevertheless opportunities for mixing freely with their peers.

(b) Opportunities must exist for experimenting with a variety of social roles in safety and without the obligation to commit themselves permanently to any.

(c) There should be a minimum of constraints to conform to any particular code of externally imposed social norms beyond those required for the safety of the individual. This means, for example, that there should be no moral obligation to work or to study.

(d) The environment should be one which permits and makes allowances for the inconsistencies and paradoxes of adolescence.

(e) There should be opportunities for privacy.

(f) There should be opportunities for communication and interaction with interested and concerned adults prepared to meet them at their own level.

Such a Utopia is hard to come by and there are few if any institutions which meet all these conditions. Borstals and similar juvenile penal establishments effectively meet some, but our present study is to see how well or ill they can be met by the conditions prevalent in the midst of our big cities, especially in the West End of London.

The City of Westminster is itself a national centre, housing many unique national institutions, such as the Houses of Parliament, Westminster Abbey, The National Gallery, Buckingham Palace and Whitehall. It also serves as a national entertainment centre, as it contains most of the best theatres, cinemas, restaurants, strip-clubs and brothels in the country. These are concentrated chiefly in the district of Soho. It is in this sense that Piccadilly Circus or Trafalgar Square can claim to be the hub of the country. Westminster in general and Soho in particular have maintained these national roles for at least 400 years if not longer, and it is of interest that along with these entertainments Soho has always maintained a fringe population of young people who are drifting. It is remarkable how many of the characters in Mayhew's "London Poor" (1958) are replicated (with only minor variations) in the Soho scene of today. For hundreds of years therefore, young people have drifted

into London having broken away from their homes, *Oliver Twist's* in search of their identity, attracted by the bright lights and the excitement. For hundreds of years also there have been plenty of Bill Sykes' and Fagin's ready and willing to exploit them.

Soho offers special attractions for these youngsters. It is bright, exciting and deliberately attractive to youth. Its *raison d'être* is the entertainment industry and as a result it has a very small residential population. Although it is extremely crowded on most evenings the vast majority of such crowds are transient visitors who have come in for a single evening's entertainment and will never see each other again. It therefore offers to young people the anonymity which is so essential for adolescents. For the same reasons there is little demand on young people to assume fixed social roles. Some do indeed find employment on the fringes of the entertainment industry, as doorkeepers, waitresses, strip-artists, porters, ponces or prostitutes, but such roles are notoriously unstable and fleeting.

The third condition (lack of legal and social constraints) is also met. By tradition Soho is an area where many social constraints are relaxed. Changes in the climate of public opinion affect this laxity to some extent, and from time to time attempts are made to "clean up Soho". Thus, after the publication of the Wolfenden Report (1967) prostitution disappeared from the streets, although it continued to flourish indoors. More recently the police activities referred to as "Operation Dragnet" has reduced enormously the population of weekend teenage visitors to Soho and has resulted in the closure of many of the clubs and discotheques which catered for their needs. In the summer of 1970 a police decision was made to clear Piccadilly Circus and Trafalgar Square of its semi-permanent "hippy population"; they were greatly harassed by the police and their numbers have now considerably diminished.

Lastly, Soho offers a perfect environment for adolescent inconsistency. The scene is ever-changing, confused, anonymous, busy, incandescent, and evanescent. So much so that the personal inconsistencies of a single individual pass quite unnoticed.

Two conditions are not met at all. There are no opportunities for real privacy in Soho. There are few interested and concerned adults available, only adults who are out to exploit them. Over all, despite the advantages offered, the element of safety is low.

The ways adolescents use this particular environment for their "moratorium" depend on a number of factors. Most of the youngsters who come into Soho are already very vulnerable if not already damaged; in general they come from families from whom they feel totally alienated and who are unable to give them any support at all.

But it should not be thought that all the Soho unattached fall into one category. Several different groups can be distinguished although the boundaries between them are ill-defined and their membership is mobile.

For a description of these groups I am indebted to Miss Carol Bohnsach, the senior worker in the Soho project (unpublished report).

Charing Cross and Covent Garden

- (1) *The young vagrants and drifters*—kids on the road seeking a place to doss, casual labour and

companionship. They follow a life style similar to that of the older vagrants found in the area. They are probably lower in intelligence than other West End groups and lacking in criminal, social and "vocational" skills.

Piccadilly

(1) *The junkies*—registered heroin addicts and other intravenous drug users who congregate around Piccadilly to meet friends, collect their "scrip" and purchase or sell additional drugs.

(2) Groups of young people have taken up the "hippy" mode of dress and behaviour—distinguishable from the summer influx by their year-round presence and their adoption of a "drop-out" life-style in order to reconcile often severe emotional problems to the rest of society.

(3) The "activist" young person—politically and socially oriented, seeing his existence on the streets and his life-style as a form of protest against the "straight" world.

(4) The *homosexual world*—e.g. the young boys around "renters corner" and the amusement arcades. They are there to pick up "punters" and are often involved in "rolling" incidents. Some are homosexual; others are not, but the attraction of easy money and the potential "Sugar Daddy" draws them to male prostitution.

The Soho Clubs

(1) *The petty criminals*—smart dressers, small time thieves and conmen who probably could not survive in a more organized world of crime. They resort to poncing when hard up for cash.

(2) *The prostitutes*—including girls who have been "on the game" for some time, and others who have fallen into something resembling prostitution in search of a bed and companionship. Their use of drugs varies a good deal, as do their alternate group connections.

(3) *The homosexual groups*—e.g. the lesbian groups seeking companionship or a place to "get lost" for a while in a relatively accepting atmosphere. Their group ties are strengthened by the flowing movement in and out of Holloway Prison.

The fate of these different groups depends on many different factors, and it would be very difficult to predict with any particular individual what his or her ultimate outcome will be. Above all the "scene" is fluid and nothing remains constant for very long. Individuals suddenly disappear; sometimes they reappear weeks or months later; sometimes they do not, and very few questions are asked about them. Whole groups may vanish as a result of police pressure, only to emerge at another place later on. In part it is this evanescence which make Soho such an attractive place to young people.

The factors that cause an individual to "gel" into a particular social role are therefore not easy to identify. They can only be surmised and the following are a few informed guesses:

(1) *The family network*. For a few youngsters, re-entry into their own family network remains a possibility. The family may be willing to receive him or her back after his experience in the West End and will accommodate themselves to the changes that have taken place. For very many however this is not possible. Either the family cannot adapt itself to the new identity of the returning prodigal, or it does not want him back, or it no longer exists. Not infrequently the families from which these youngsters come are themselves highly unstable and the break-up of the family may indeed have been the precipitating cause of the adolescent's flight into London. Regrettably the same things can be said of the community social care-taking agencies in the places of origin of the youngsters concerned. Too often attempts to return them to their home towns have failed as a result of the lack of real support available to them in the community.

(2) *The "Ego-strength" of the individual*. It is remarkable that some youngsters

manage not only to survive some appalling experiences in the West End "scene" (including addiction to drugs, imprisonment, pregnancy, abortion, prostitution, etc.) but also to emerge at the other end refined and strengthened by their experience. Throughout it all they manage to preserve their own integrity. We can only guess at why this should be and words like "ego-strength" do nothing to explain it.

(3) *The vicissitudes of their experience in Soho.* No one can predict who they will meet or what external resources they will find to support them. Sometimes they will find either an individual or a group which is able to give them support at a critical time and perhaps offer them the shelter of a temporary identity, or at least a label such as, for example "Homosexual", "Lesbian", "Junkie", "Prostitute", "Hippy", "Thief", "Revolutionary". Such labels are harmful in so far as once affixed they may be very difficult to erase. What started out as a temporary shelter can then become a fixed way of life. Some decisions once taken cannot easily be reversed, such as the decision to become a mother; a few are irrevocable, the most important of these being suicide. In my view one of the main responsibilities of those who have the care of adolescents is to prevent them from making such irrevocable decisions, to help them to keep their options open. Up to a certain point Soho allows this, but beyond this point there are grave dangers. Thus, the youngster who shelters behind the label of "Junkie" may indeed end up as an addict.

THE RESPONSE OF THE CULTURAL MAJORITY

Soho may offer adolescents an opportunity for a moratorium, but it also provides the "virtuous" majority with an ideal and ready-made scapegoat. In the eighteenth century curious visitors were offered the opportunity of conducted tours of Bedlam to see the lunatics. In the 1970's similar conducted tours of the Soho scene are available for those in search of vicarious gratification. It would seem that our society needs to maintain an image of its younger generation as "bad" because of the threat which it offers (for the reasons given earlier), and that Soho offers an ideal opportunity for this while at the same time satisfying voyeuristic needs.

There are therefore considerable external pressures on alienated teenagers in Soho to remain alienated, and the road back into the community is a very hazardous one. Unfortunately, it is not enough for a reformed prostitute or drug addict to declare their wish to be accepted once more. The label "Whore" or "Junkie" is one that is very difficult to get rid of. The community will not only believe but will also hope that individuals so labelled will continue to act according to expectations, and may indeed put a good deal of pressure upon them to do so. In this way their role of scapegoat is maintained.

The same phenomenon of course can be seen within families and I suspect that many of the youngsters who land up in the West End are really family scapegoats carrying a burden of guilt for the whole family.

There are several choices open, in theory at least, to young people who have spent some time in the West End:

(1) A few effect re-entry into their own community and are able to feel enriched by their experience.

(2) A proportion will be able to set up their own alternative life-style, more or

less deviant from the norm, through the establishment of alternative institutions to the family, e.g. a homosexual marriage or a commune.

(3) Some remain "drop-outs" indefinitely, i.e. they adopt the life-style of a vagrant and they become professional tramps.

(4) For some the temporary label they may have adopted in Soho becomes a career. The casually promiscuous girl "on the game" becomes a professional prostitute or procurer. The petty bag-snatcher becomes a professional thief, or a professional prisoner. The occasional drug-taker and pusher begins to organize his own ring. The revolutionary activist becomes a professional politician.

(5) Finally, a proportion simply disappear; their fate is unknown. In all probability some become inmates of psychiatric institutions. Some undoubtedly die, of drug overdosage, exposure, or one of the diseases associated with this (e.g. pneumonia and infective hepatitis).

There is a need for research into this field in order to determine the outcome of these youngsters' sojourn in the West End. We can at present do no more than guess at the numbers involved and we have no knowledge at all of the proportion who become casualties. George Goetschius, the Youth Consultant for the Y.W.C.A., has also worked extensively with unattached adolescents and has written up his conclusions in his book *Work with the Unattached* (1967); however, he is more interested in the personality and background of the young people concerned than with the setting in which they choose to re-define themselves.

Until recently adolescents who arrive in Soho have not been able to expect any additional help beyond that offered by their peers and by the commercial businesses (cafes, clubs, etc.) within the area. Only too often this has meant that adolescents have shuttled between the total security of prison and the jungle of the west end without any attempt being made to bridge the gap.

Within the past five years public awareness of the predicament of these youngsters has grown and now attempts are being made by a variety of agencies to offer additional service. Many, if not most, of these have been guided by a rescue phantasy the idea being that teenagers must be saved from the pit of iniquity called Soho before they are forever damned. Few have been able to recognize the positive aspects of the area as an adolescent's retreat. The result has been that many youngsters have found it difficult to accept the help offered since it would have required them to alienate themselves from their peers. Few of us in any case enjoy being rescued.

More recently some of the agencies have adopted a different point of view towards the area and have established bases within Soho which are a part of the scene.

Both voluntary and statutory social services are involved amongst other projects. The London Borough of Camden Children's Department is co-operating with the Soho project in establishing a house for homeless adolescents. While the probation and after-care service are developing the idea of an after-care hostel for ex-Borstal girls somewhere in the West End, the Youth Resettlement Service already runs a club in the area staffed by probation officers and Borstal staff.

It remains true, however, that most of these agencies view themselves as having to contend with Soho as best they can and to battle against its influence rather than

as dealing with a possible resource. Most have nevertheless been obliged to modify their traditional case-work approach since it simply does not work. Young people at this stage of their lives are not able or willing to keep appointments, they do not usually see themselves in the role of "client" or "patient"; and they are suspicious of "do-gooders". They may sense that something is wrong, but they do not usually locate the problem inside themselves; nor are they of necessity wrong in doing this. They do not see themselves as sinners and they are unrepentant about their mode of life.

Many psychiatrists and case-workers do not find it easy to work with such individuals. Adolescents are suspicious of adult middle-class pretensions. They challenge and question our authority. They suspect that we build imposing clinics and offices for our own good rather than theirs. They suspect that our insistence on privacy, appointments systems, waiting rooms and confidential filing systems stems from our own need to maintain distance between ourselves and them, to bolster up our own slipping authority and to keep them in the dependent position of supplicants and sinners. To some extent they are probably right.

"If you are really genuine in your wish to help," they said, "you must be prepared to strip yourself of these pretensions and level with us", which means in practice that the helpers must be prepared to go into Soho and meet the young people on their own ground. Most agencies have recognized this and have either established informal drop-in centres within the area, or else have made use of detached workers who are prepared to meet the youngsters in the clubs, cafes, and bars which they frequent. This has not been easy for anyone with a traditional case-work training.

A Soho project worker found that to begin with, in order for young people to lose their suspicion of her it was necessary for her simply to sit around doing nothing for weeks and months on end in the all-night cafes and clubs. Sometimes no one would speak to her at all. Gradually, however, her presence and her explanations of who and what she was were accepted by the young people and she began to discover ways in which she might be of help. At first the requests made were very concrete: "How can I get a 'fix'?" "Can you find me a job?" She would respond to such requests as best she could and soon came to realise the poverty of resources available to these young people.

Gradually, however, she began to find areas in which she could be of help, often in very practical and concrete ways, such as by offering to accompany a teenager to hospital, or to help someone find an understanding lawyer, both tasks which they would be unable to accomplish on their own. Later she was sometimes able to help in other ways, and gradually she came to act as a bridge between the alienated youngsters and the community from which they had isolated themselves.

An interesting development which has taken place recently followed the appointment to the project of a young man who was himself a "drop-out" and who had used his period in the wilderness to organize a collection of young "drifters" into a left-wing political action group. This group of "communards" were not very popular with the establishment or with the police; among other activities they took over a large empty house in Piccadilly and attracted a great deal of publicity. However, from the point of view of the individuals concerned it gave them a purpose

for living and was a great boost to their morale. The employment of this young man by a voluntary project has not been without its difficulties but the challenge that he presented to the project has been a stimulating one. Whereas the conventional social-work approach to young drop-outs assumes them to be deviant weaklings who need to be rescued, the alternative (and perhaps threatening) view is that these young people only require a little support to be able to organize themselves effectively into a powerful political force which can challenge the establishment and offer a viable alternative to the social systems of our time.

This view deserves to be taken seriously. It could of course be argued that National Socialism arose out of the same kind of discontented, deviant minority group, the result of the economic collapse of post-war Germany in the 1920's. Yet even if this is true, it does not follow that the conventional approach, namely to label all such deviants as either "criminals" or "patients" is the best one. It is perhaps time to recognize the potential strengths of our alienated adolescents and to give some credit to the environment in which they choose to define themselves.

SUMMARY

In this essay the plight of "unattached" adolescents in the West End of London is considered in the light of Erikson's concept of an adolescent "moratorium". The suggestion is made that the district of Soho fulfils many of the necessary conditions for such a "moratorium" and the fate of adolescents who select this particular environment for this purpose is explored. Some consideration is also given to the caretaking resources provided by the community within the district.

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BOOK REVIEWS

Therapeutic Consultations in Child Psychiatry. D. W. WINNICOTT. Hogarth, London, 1971, pp. xxi + 410. £4.50.

THE IMPORTANCE of this book lies in the fact that it makes readily available for criticism, for detailed study, and for teaching, a very rich source of child psychiatric case-material. What makes it unique is that the material in itself is continuously enjoyable, varied and interesting: the reporting is of a very high standard, so that the cases come alive in a particularly vivid way. The text is nearly always illustrated (and lightened) by numerous reproductions of drawings by the child clients and by the child and the author working (or playing) together.

An invaluable, and hitherto unpublished introduction establishes the principles which underlie the consultations and their presentation, but it can do no more than point to the existence of the theory which informs the work, theory which has grown up with Winnicott and was towards the end of his career, so much part of him, that he did not have to think about it in a deliberate way. This is not to say that the reader does not have to think hard as he reads.

The book as a whole illuminates so much of what Winnicott wrote before its composition, that its publication could be seen as representing the culmination of his life's work. I believe that its significance is profound, for child psychiatry, and for all those individuals in medicine and social work who aspire to learn about, or to provide, a professional setting in which vital communication with children is facilitated.

Winnicott who was 74 when he died in 1971, practised psychoanalysis in England for four decades and in his lifetime was widely acknowledged to be the most outstanding English analyst. His international reputation rested on his psychoanalytic work and on his many original contributions to theory and technique. For example—The Manic Defence, Transitional Objects and Transitional Phenomena, The Antisocial Tendency, Ego Distortion in Terms of True and False Self, Hate in the Countertransference, Metapsychological and Clinical Aspects of Regression within the Psycho-Analytical Set-up, Dependence in Infant-Care, in Child-Care, and in the Psycho-Analytic Setting. Yet, as late as 1958 he could state that he had never cut loose from the paediatric practice which was his starting point . . . "It has been valuable to me to keep in touch with social pressure, which I have had to meet as physician at a children's hospital. Also I have enjoyed the constant challenge of private practice and the therapeutic consultation. These interests have provided me with an opportunity for applying in a general way what I have at the same time been learning through the practice of psychoanalysis proper".

The present volume is the outcome of these interests. A representative selection of twenty-one psychotherapeutic consultations from Winnicott's hospital and private practice are described in detail. Some have been published elsewhere, but the book is not a collection in the ordinary sense. It hangs together as a whole, with a linking narrative and explication. There are twenty consultations with children aged between 21 months at first consultation (with the parent in this case), and 16 years, and one with a mother. In nearly all of these an exchange of drawings with the child is employed, very frequently with a basis in what has come to be known as the Squiggle Game. The drawings are reproduced in as near as possible their original state, with their pencilled annotations alongside.

The method of reporting is described by Winnicott as follows: "When I wish to report a case, I take notes of everything that happens throughout the interview, including the things I myself do and say, and although this imposes a severe task on myself this is counterbalanced by the reward that comes from the reconstruction of almost a whole interview from the notes taken, often illegible after two or three days". These are not, in fact, illegible, and the sceptical reader may compare the printed text with the pencilled annotations, recording errors in transcription if he can.

Winnicott's purpose in presenting these cases is to demonstrate a specific area in which psychoanalysis can be applied in the practice of child psychiatry, through the full exploitation of the first interview with the child, "thus making sense of psychoanalysis in economic terms". By this means, a suitably trained, or selected, child psychiatrist could have effectively under his care, at any one time, a hundred or more cases.

In each case, Winnicott believes that he succeeds in establishing communication with the child, and in demonstrating that this communication is vital to the successful management of the case. He cashes in on the very great confidence which many children show in their first contact with someone whom they expect to be helpful. (At Paddington Green Children's Hospital, in the mid-twenties, he had been struck by the frequency with which children had dreamed of him the night before attending.) He draws attention to the similarity between this state of affairs and that which obtains, "in a much less useful way", in hypnosis. If the Special Occasion is not used in order to further the child's belief in being, and readiness to be, understood, then there is a wasted opportunity. If it is used, then there will be, in some cases, changes in the child which can be acknowledged and met by the parents or those responsible in the immediate social setting. A child whose emotional development has been blocked is consequently enabled to move on.

In other cases a thoroughgoing first interview may make a heavily defended child accessible to a longer or more intensive treatment. Indeed, Winnicott makes the point that alternative methods must always be held in readiness.

Although the full exploitation of first interviews allows him the freedom to be spontaneous and impulsive, Winnicott seeks to show that in each case he is adapting to the child's needs, and allowing him to structure the interview. And that as soon as the child begins to feel that he may perhaps be understood, the material becomes specific and acutely interesting.

Winnicott has a definite intention, to get to dream material, to "dreams dreamed and remembered. Dream contrasts with fantasizing, which is unproductive, shapeless, and to some extent, manipulated".

Interviews with parents are described, and Winnicott believes that these are often of crucial significance but he emphasises, and convincingly shows, how much can be learned from the child seen first, without the parents. He very often uses material from the child consultation in increasing the parents understanding, and believes that this is usually the best way to help them.

It is tempting to go on describing this very rich book, and especially to quote from it again. Two quotations must suffice: "Dogmatic interpretation leaves the child with only two alternatives, an *acceptance* of what I have said as propaganda or a *rejection* of the interpretation and of me and of the whole set-up". And: "Finally, I hope it will be recognised that in presenting these cases I am not trying to prove anything. The criticism that I have failed to prove my case would not be appropriate as I have no case. I would add that it would always be better if the student could gather the material for himself or herself from personal contact with children instead of from reading my descriptions, but this is not always possible. . . .".

These quotations, will I hope, have set the tone of the book. It is the last work of a brilliant, wise old man, of a child psychiatrist who "slogged away at technique, then actually became able to play music", the fruit of a lifetime's experience of clinical work which became as serious and as enjoyable as play. Full of clinical data and of relevant theoretical comment, it reflects an attitude which remained tentative, humorously questing, painstaking to the end.

Winnicott is aware of the limitations of the approach which he has described, in that it relies on an "average expectable environment". He hands on to others, the task of organizing research which will make environmental assessment easier than it is at present. The book is beautifully produced, and there is a useful bibliography, compiled by M. Masud R. Khan.

JAMES R. HOOD

Proceedings of the Second Congress of the International Congress of the International Association for the Scientific Study of Mental Deficiency. Ed. D. A. A. PRIMROSE, Swets & Zeitlinger, Amsterdam. pp. xxii + 768. £13.75.

RECENT correspondence in a sister journal* has drawn attention to two conflicting attitudes to the publication of conference proceedings. Firstly, that the proceedings of a conference should only in the most unusual circumstances be given wider circulation than among those who were actually present, in that there is a tendency to report only work which has previously been published in reputable scientific journals. Also that a selection of such papers is not an adequate substitute for a well-ordered textbook. Others find such volumes very valuable, often presenting new contributions together with the results of critical discussion. It is worthwhile considering the present volume in the light of these points. It is admitted in the preface that "no publication can convey the atmosphere of the Congress" and in the words of the President, Dr. Shapiro "the most useful work is done in the corridors and in private discussion". However, this very full and comprehensive collection of contributions will surely be welcomed as a work of reference by all those involved in research with the mentally retarded whether they were present at the congress or not. Moreover, such a volume is of particular value in giving a broad over-all view of research in this field at a particular point in time and provides an invaluable balance sheet of our current state of knowledge which it would be difficult to replace by any textbook or irregularly published collections of papers.

That the volume will be of value to those who attended the meeting is evinced by the fact that over four hundred papers were presented, only a small percentage of which could actually have been attended by any single participant.

Most of the papers for the plenary session, and those by invited speakers, have been published in full while others are abstracted. It would be impossible in such a multi-disciplinary field for any single reviewer to do justice to the wide variety of contributions, but outstanding amongst those presented at the plenary sessions, and perhaps the most representative of the major advances in knowledge since the first congress is that by R. Heber and H. Garber on their early intervention programme to prevent retardation in culturally deprived children. Their method of case finding, is unique. It overcomes the problem previously described by Kirk of identifying pre-school retarded children, by taking the maternal intelligence as an index for intervention on an epidemiological basis. The impressive early results of this study must, if sustained, surely have far reaching implications. Having had our appetites whetted by a number of preliminary reports the more detailed findings of this study will be eagerly awaited.

A number of papers reviewing current research, particularly into language development, chromosomal and biochemical studies and educational methods are particularly valuable, although it would be helpful if these could have been grouped together in the sequence in which they came into the programme. This might have allowed for a brief editorial comment emphasizing the points of main interest.

The same criticism applies to the symposia which, although having a brief opening statement, presumably from the chairman, do not consider the content of the discussion. It is possible that in some instances we did not miss much as many of the papers are disappointingly heterogeneous. For example the symposium on behaviour modification techniques, although presenting new work of interest, can scarcely be regarded as representative of the enormous expansion which has taken place in this field over recent years. Similarly, there is little mention throughout these proceedings of epidemiologically based research into the experimental evaluation of services.

These criticisms apart, this well edited and presented collection of papers, in places made more valuable by the excellence of translation, which will be valued as a work of reference by workers in this field, whether or not they attended the congress.

J. A. CORBETT

* (1972) *Br. J. Psychiat.* **120**, 589-590.

Comparative Psychotherapy. An Experimental Analysis. A. O. DI LORETO. Aldine, Chicago, 1971, pp. ix + 315. No price stated.

It is becoming commonplace, in reviews of psychotherapy research, to attribute the lack of convincing evidence of treatment efficacy to the failure by researchers to incorporate several fairly obvious refinements in their designs. These include the delineation of client and therapist characteristics associated with differential response of well-defined disorders to the various treatment techniques, the co-ordination of "process" and "outcome" measurements within the same experimental design, and randomly allocated, comparable and homogeneous treatment and placebo control groups. However, few researchers have yet completed studies meeting the criteria which so many would seem to espouse. The author of this book is among the first to do so, and for this reason alone it is important.

The experiment reported in this book compares the outcome of systematic desensitization, rational-emotive therapy, and client-centred therapy, in the group treatment over nine sessions of interpersonal anxiety in students classified as introverts and extroverts. The three treatment techniques are compared with each other and with an attention placebo and (on some measures) a no contact control group, in terms of changes in self-reported general and interpersonal anxiety, observations of behaviour indicative of anxiety in a novel social situation, and self-reported frequency of initiating social engagements. Therapist ratings of anxiety are also included. The results indicate that all three treatments are superior to the two control conditions, although the placebo control group do better than the no contact group. Overall, systematic desensitization is more effective than the other two treatments, and is equally effective with introverts and extroverts. Client-centred therapy is as effective as systematic desensitization with extroverts, but no more effective than the control conditions with introverts. In contrast, rational-emotive therapy is as effective as systematic desensitization with introverts, but no more effective than the control conditions with extroverts. A follow-up assessment thirteen weeks later yields essentially similar results to those obtained at the end of treatment. The process data include ratings of client self-exploration in the client-centred and rational-emotive groups, which show increasing trends over treatment, with differences in level consistent with the outcome data (introverts showing more self-exploration with rational-emotive therapy, extroverts with client-centred therapy). However, assessment by the clients' responses to relationship questionnaires of the client-centred "therapeutic conditions" do not differentiate any of the groups. The book includes intelligent theoretical discussion and details of the treatment procedures, corroborated by content-analysis of the recorded sessions.

The study and its presentation are open to several criticisms. Some of the outcome measures rely rather too much on "face" validity. The designation of repeated measures after each session on the anxiety indices as "process" variables is questionable. The follow-up period is very short. Heavy reliance is placed on univariate analysis of variance where a multivariate model would be more appropriate. The design of the procedures in such a way as to provide a simple comparison of standard treatments characteristic of three "schools" is open to the objection, made in the critiques by representatives of the "schools" which are included in the book, that the brief, inflexible programmes of treatment do not do justice to the approaches they represent. Seventy pages of tables and figures are rather difficult for the reader to digest. However, most of these deficiencies are direct, and possibly unavoidable, consequences of the strengths of this piece of work, and so do not discourage the reviewer from recommending this book to anyone interested in the validation of psychological treatments.

D. A. SHAPIRO

Children of Special Value. Interracial adoption in America. DAVID C. ANDERSON. St. Martin's Press, New York, 1971, pp. vii + 184. \$6.95.

FEW books have been written about interracial adoption and although David Anderson is writing specifically about adoption within the American culture, many of the issues he discusses are relevant to everyone concerned with cross race adoption.

The author is a journalist who has himself adopted three children. His book contains much subjective material from his own experience in adoption, as well as carefully sifted material collected from two adoption agencies. Throughout the book he uses well documented case studies and research findings to illustrate his points.

The first part of his book is composed of case studies of four families from widely differing backgrounds, who have adopted non-Caucasian children. The family interviews are not intended as objective case histories and there are occasional inconsistencies with some problematical conclusions based on unsubstantiated facts. None the less the families are graphically portrayed, giving the impression of a real encounter, with white parents successfully experiencing the joy and the frustration of adopting black children. Their personal motivation and philosophy for adoption is explored in relation with their own development and family history.

The second part of the book covers the wider theoretical aspects of adoption. David Anderson emphasises the need to remember that the primary point about interracial adoption is not the racial elements but the fact that a child is being placed in a family. The need for parents to accept both their own infertility and the fact that this child can never become their natural child, is widely accepted in most adoption literature. A less well discussed problem is the alienation that many adoptive parents feel within the wider community—a feeling that adoption is second best. David Anderson suggests that as communities become more conscious of the need for population control, adoption will gain in social approval and may be seen as a moral responsibility.

Discussing the problems that arise in Adoption agency policy and practice, emphasis is placed on how the prospective adopters view the caseworkers assessment interviews. The dangers of a high rate of mobility amongst staff in agencies together with the selection policies that may depend on the judgement of one inexperienced caseworker are highlighted. Comparison is made between the judgemental-evaluative approach and the educational, self selective approach used in some agencies, with emphasis on the power adoption agencies have on the lives of parents and child.

The last chapters attempt to answer some of the standard arguments against placing black babies with white parents. The lack of significant difference between interracial and intraracial adoption is perhaps, underestimated. Adopting parents, according to the author are confronted with three main tasks—to come to terms with their own feelings about racism; to accept an increase in alienation from their community and to give the child a sense of his own identity. His conclusion of the most essential factor is that the blackness or brownness of an adopted child should be regarded by his white parents as something precious that deeply enriches their family".

This is an easy book to read which has much reassurance and encouragement to offer prospective adoptive parents. The emotional subjects of adoption and racism have been sensitively handled and there is a sincere attempt to present the philosophy which underlies successful interracial adoption.

E. IZZARD

The Social Psychology of the Child with Epilepsy. CHRISTOPHER BAGLEY. Routledge & Kegan Paul, London, 1971, pp. ix + 307. £3.25.

WE ARE all potential sufferers from epilepsy. Given sufficient metabolic disturbance or pressure on the brain, there is none of us who would not have a fit. In this book, Christopher Bagley sets out to examine whether the behaviour of those children who have fits, without such unusual physical circumstances, is different from those who do not, and in what way parental attitudes and factors in society are as important as the epilepsy in producing abnormal behaviour. This is a fascinating subject and the author, a sociologist with considerable background knowledge in psychology and education, is obviously well qualified to bring fresh perspectives to the subject. It is therefore regrettable that the book is a disappointment in so many ways.

There is indeed a competent review of the literature on the association between psychiatric disorder and epilepsy, but this is followed by rather skimpy and often inaccurate sections on a range of other subjects—including psychosis and crime. It is stated, for example that “the association of epilepsy and childhood schizophrenia is extremely rare”, when in fact a high proportion of children with autism (a term Bagley seems to use interchangeably with schizophrenia) develop fits at some time or other in their lives. He writes too that “there is no suggestion of violent or sexual crimes being over-represented in epileptics in prison” when in fact it is clear from the preceding discussion that several writers, perhaps wrongly, have suggested just this.

The study reported in detail by the author is one in which he himself collaborated, though there is a puzzling lack of acknowledgment of his co-workers. The sample of 183 children aged between 3 and 16 years was selected because of attendance at a hospital specialising in neurological disorders and cannot therefore be regarded as a representative group. The author finds that three main factors (adverse parental attitudes, environmental hazards, and minor fits with motor involvement) operate by interacting together to produce behaviour disorders in children with epilepsy. The presence of brain damage discriminates normal from aggressive, but not anxious children, though a definition of brain damage which relies exclusively on historical data and the E.E.G. and which does not include a current neurological examination is idiosyncratic to say the least.

No-one would wish to argue with many of the author's conclusions. He believes it is important for doctors and psychologists to communicate with teachers about the strengths and disabilities of children under their care. He is opposed to community prejudice against epilepsy, though he fails to grapple with the difficult problem of combating such prejudice, when in fact there is a real association between epilepsy and psychological difficulties, such as aggressiveness and overactivity. He proposes that prejudice forces the person with epilepsy to marry someone who is also handicapped, though why he suggests this is an unverifiable hypothesis it is difficult to know.

The book does not by any means lack in interest, and it would be tedious and perhaps unfair to mention other shortcomings. Indeed, Professor Desmond Pond (who is himself twice misleadingly quoted on the importance of focal E.E.G. abnormalities in children with epilepsy developing dementia) contributes a foreword in which he states that this book is “likely to be the standard reference for years”. Could be. I suppose this might be a commentary on the usual level of “standard references”.

PHILIP GRAHAM

Psychiatric Disorders of Children with Congenital Rubella. STELLA CHESS, S. J. KORN and PAULINA B. FERNANDEZ. Brunner-Mazel, New York/Butterworths, London, 1971, pp. xi + 178. \$7.50.

THOUGH the physical handicaps which may effect children whose mothers have rubella in the first trimester of pregnancy are well documented, this is the first detailed study of the behavioural sequelae of this infection. A sample of 243 children (the authors do not state how complete it was) aged 2½–4 years whose mothers were infected in the 1964 epidemic, were studied, though only 171 had a fully structured psychiatric and psychological examination by the authors. Their figures on the incidence of psychiatric disorder are confusing for United Kingdom readers, because they include

those with uncomplicated mental retardation (65 cases) and because their system of classification is unfamiliar and does not appear to be based wholly on objective criteria. However almost half (118) of the children showed no psychiatric disorder. Ninety-one were mentally retarded (most of them severely or profoundly, 26 having a psychiatric disorder). Cerebral dysfunction ("the presence of both neurological and behavioural pathology") was diagnosed in 8 cases (3.3 per cent) and reactive behaviour disorder ("aberrant behaviour as a result of . . . stress") in 37 children (15 per cent). Ten children were labelled autistic and a further 8 partially autistic giving a prevalence rate of 412 per 10,000 for the core syndrome of autism, and 329 per 10,000 for the partial syndrome. The authors contrast these figures with Lotter's findings in Middlesex of a prevalence rate of 2.1 per 10,000 and 2.4 per 10,000 respectively, and suggest they give strong support to the view that autism has an organic etiology. There were 3 times as many children with psychiatric disorder in the group with 2 physical handicaps (32 per cent) as in the group with no handicap (11 per cent). Visual disorders alone or in combination with deafness carried the greatest risk. The most fascinating and valuable part of the book is the analysis of 13 areas of behavioural disturbance including such things as sleeping, eating, elimination, speech, mood, etc. Even the children with no psychiatric disorder showed a surprisingly high level of disturbance in every area studied, 53 per cent having disturbances of mood and 73 per cent speech deviance. Nearly 75 per cent of the total sample had a hearing loss (fluctuating in several cases) but 83 per cent had speech defect including some who were otherwise normal. The level of routine functioning in self help tasks was compared with the capability level and as with an older group of mentally retarded children the authors had studied in an earlier survey, they found a marked discrepancy between them. Parents tended to report capability rather than performance thus minimising the child's actual limitations. Chess and her colleagues give a sympathetic account of the problems faced by the parents both from the child (39 per cent being first born), and from the often conflicting advice of professional people on management or placement. Parents often did not mention "crazy behaviour" spontaneously since they couldn't imagine that it might be part of the rubella syndrome and believed it resulted from their handling. Most were overburdened with visits to a variety of specialists and the need for parent guidance from one source only, is emphasised. The book is only modestly produced and checking has been lax so that a large part of one page (p. 23) is unintelligible, at least one author is given the wrong initials and Mary Sheridan is referred to as a male. Despite these and other criticisms the book is essential reading for all concerned with handicapped and disturbed children. A follow-up study of this group is most necessary and will be eagerly awaited.

CYRIL WILLIAMS

ERRATUM

M. L. RUTTER: Critical Notice of: **Childhood Behaviour and Mental Health**. *J. Child Psychol. Psychiat.* 13, (3), 219-222 (1972).

The Editors regret that certain information was left out of the book title. The full book title is:

Childhood Behaviour and Mental Health by MICHAEL SHEPHERD, BRAM OPPENHEIM and SHEILA MITCHELL. University of London Press, London, 1971, pp. ix + 240. £3.40.



mother infant separation,
rhesus monkeys

ROBERT A. and DAVIES, LYNDA (1972) Removing infant rhesus from mother days compared with removing mother from infant. *J. Child Psychol. Psychiat.* 13, 237.

Summary—In a previous experiment, 6 rhesus monkey mothers were removed from infants for 13 days, the infants being left in their familiar environment. Here the procedure was reversed—5 infants were removed to an isolation cage in a strange room, mothers staying in their familiar environment. Contrary to expectation these infant-removed infants were less disturbed than the mother-removed infants. This difference was associated with, and was probably due to, a more positive role by the mothers of the infant-removed group in mother-infant interaction after reunion. It is suggested that the effects of a separation experience may be mediated in part by the disturbance to the mother-infant relationship which results.

grammatical rules, normal and
subnormal children

MURRY, B. and LUNZER, E. A. (1972) The learning of grammatical inflexions in normal and subnormal children. *J. Child Psychol. Psychiat.* 13, 239–248.]

Summary—Two groups of 18 children, one of average ability, the other drawn from special schools were selected as of approximately MA6. Each subject was given a learning task requiring the induction of grammatical rules (to supply the appropriate nonsense-syllable ending to a nonsense syllable stem) for past, plural and possessive. The three groups varied in generality and were allocated to grammatical form classes in a perfectly balanced design. Both groups of children learned the more general rule more effectively, and no other differences were consistent. E.S.N. children were less able to apply the rule to a single presentation of a transfer example. The findings are examined for the implications that they throw on the nature of specific retardation in E.S.N. children.

residential care, maladjustment

YULE, WILLIAM and RAYNES, NORMA V. (1972) Behavioural characteristics of children in residential care: in relation to indices of separation. *J. Child Psychol. Psychiat.* 13, 249–258.

Summary—Children in two large Group Cottage Homes were rated on standard behaviour ratings scales by both their houseparents and their teachers. They were found to be significantly more maladjusted than their peers living at home. Attempts were made to relate the behavioural ratings to a variety of indices of the children's separation experiences.

school—exclusion from

YORK, ROLAND, HERON, JUDITH M. and WOLFF, SULA (1972) Exclusion from school. *J. Child Psychol. Psychiat.* 13, 259–266.

Summary—(1) Exclusion from school is numerically a small problem. Forty children excluded from Edinburgh schools are described. (2) Exclusion from school occurred more often in secondary schools and much more often in boys. While commoner when opportunities for outdoor play are reduced in the winter months, at mid-term, it is by no means the result of an arbitrary decision by the teacher, but the culmination of a series of aggressive acts by a seriously disturbed child who is usually poorly endowed intellectually, backward educationally, socially deprived and with a family background characterised by disruption, marital disharmony, sociopathy and delinquency on the part of the parents. A high proportion of excluded children were already attending special schools. (3) One to three years later only 19 out of 25 children still at school were living at home and attending ordinary schools. 19 were in psychiatric hostpitals, residential schools or children's homes.

"Autistic-savant", mental function
childhood psychoses

MAN, JOAN (1972) A case study of an "autistic-savant": mental function in the autistic child with markedly discrepant abilities. *J. Child Psychol. Psychiat.* **13**, 267-278.

Summary—This paper describes discrepant mental function in an autistic-savant who is not labelled because he has the behavior of an autistic child and the cognitive abilities of the idiot savant. Major findings are that: perception is adequate for visual discrimination, but not for spatial orientation; superior memory exists for specialized information of limited scope and is explained, not by unusual rates of initial learning, but by a tendency to forget; abstract associations are formed while developmentally easier tasks are learned. It is suggested that these contradictions—frequently found in psychotic children—are a natural developmental outcome of deficiencies in somatic awareness.

childhood, hallucination

ALLAN, H. G. and KOLVIN, I. (1972) Childhood hallucinations. *J. Child Psychol. Psychiat.* **13**, 279-287.

Summary—The definition and problems in diagnosis of childhood hallucinations are discussed in the background of a critical review of reported figures of incidence. Hallucinations, occurring in clear consciousness in a child psychiatric in-patient population are prevalent. There was a frequency of 5 per cent in the general in-patient group. Eighty-one per cent of those with psychosis of late onset (5 to 15 years) were hallucinated in contrast to the infantile psychosis group (onset before 3 years) where none were found. Descriptions of children with hallucinations arising in great stress, late onset psychosis and Mandrax intoxication are given.

"alienated" youth, Soho

HOLDEN, H. M. (1972) A note on "alienated" youth. The function of the district of Soho, London. *J. Child Psychol. Psychiat.*, **13**, 289-297.

Summary—In this essay the plight of "unattached" adolescents in the West End of London is considered in the light of Erikson's concept of an adolescent "moratorium". The suggestion is made that the district of Soho fulfils many of the necessary conditions for such a "moratorium" and the fate of adolescents who select this particular environment for this purpose is explored. Some consideration is also given to the caretaker resources provided by the community within the district.

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